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ABSTRACT

The evidence presented during the hearings and the statements submitted by interested parties to the Subcommittee on Conservation and Natural Resources are contained in this report. The committee was inquiring into action programs that "must be developed to restore the quality of our environment during the decade of the 1970's." Evidence was presented by conservation organizations, ecologists, student organizations, industry representatives, concerned citizens, professional academic societies, and by representatives of government departments. Copies of the National Environmental Policy Act of 1969, Congressional House Bill 16436 (a bill for an "Environmental Protection Action of 1970"), and Michigan House Bill 3055 (a bill for a "Natural Resource Conservation and Environmental Protection Act of 1969") are appended. (AL)

THE ENVIRONMENTAL DECADE (ACTION PROPOSALS FOR THE 1970'S)

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE
COMMITTEE ON
GOVERNMENT OPERATIONS
HOUSE OF REPRESENTATIVES
NINETY-FIRST CONGRESS

SECOND SESSION

FEBRUARY 2, 3, 4, 5, 6, MARCH 13, AND APRIL 3, 1970

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THE ENVIRONMENTAL DECADE

(Action Proposals for the 1970's)

MONDAY, FEBRUARY 2, 1970

House of Representatives,
Conservation and Natural Resources Subcommittee
of the Committee on Government Operations,
Washington, D.C.

The subcommittee met at 10 a.m., in room 2154, Rayburn House Office Building, Hon. Henry S. Reuss (chairman of the subcommittee) presiding.

Present: Representatives Henry S. Reuss, Jim Wright, Floyd V. Hicks, Guy Vander Jagt, and Gilbert Gude.

Staff members present: Phineas Indritz, chief counsel; Josephine Scheiber, research analyst; and J. P. Carlson, minority counsel, House Committee on Government Operations.

Mr. Reuss. Good morning.

The House Conservation and Natural Resources Subcommittee will be in order for hearing this week on action proposals for the 1970 environmental decade.

During the decade of the 1960's the Congress of the United States enacted many far-reaching environmental quality measures—the Clean Air Act, the Water Quality Act, the Clean Water Restoration Act, the Land and Water Conservation Fund Act, the Outdoor Recreation Act, the Water Resources Planning Act, the Solid Waste Disposal Act, the National Water Commission Act, the Estuarine Study Act, the National Environmental Policy Act, and other important legislation—because we saw the continuing degradation of our waters, our air, and our land, and the need for remedial legislation.

Last month, over 80 Members of the House of Representatives, from both political parties, including all the members of this subcommittee, joined in "A Call for the Environmental Decade." In our statement of December 16, 1969, we focused on a number of problems which must be resolved if we are to cure our environmental ills during the next 10 years. These issues include:

Adequate funding for waste treatment plants, separation of storm and sanitary sewers, et cetera.

Development of desalinization and recycling and the prevention of waste by evaporation and other causes, if we are to have enough usable water.

Elimination of *sources* of pollution.

Preservation of our wetlands and estuaries.

Development of pollution-free automotive engines, as alternatives to our present environment-poisoning internal combustion engine, as well as of forms of mass transportation which do not pollute the atmosphere.

Standards for industrial and powerplants, to eliminate pollutional discharges of sulfur oxides, hydrocarbons, and particulate matter.

Elimination of agricultural soil erosion and of siltation from highway construction and suburban development.

Control of chemical pollution from the use of fertilizers, herbicides, and persistent pesticides.

Standards for regional and national planning, including construction of new towns and provision for adequate open space adjacent to densely populated areas.

Expansion of our programs for parks, playgrounds, wilderness areas, wild rivers and seashores, and fish and wildlife areas.

Strict controls for solid waste disposal, and elimination of littering.

Preservation of our wildlife habitat and of our marine resources.

Provision for better management of our mineral and forest resources.

Our statement noted that "All of these environmental resources must be preserved not only for themselves, but for the life, liberty, and happiness of our people. Environment *is* for people."

In his first state of the Union address, delivered to a joint session of the Congress on January 22, President Nixon emphasized the need to "make our peace with nature and begin to make reparations for the damage we have done to our air, our land, and our water."

"The program I shall propose to Congress," the President said, "will be the most comprehensive and costly program in this field ever in the Nation's history. * * * I shall propose to this Congress a $10 billion Nationwide clean waters program to put modern municipal waste treatment plants in every place in America where they are needed to make our waters clean again, and to do it now."

We are pleased that President Nixon appears to have placed the Office of the President firmly behind increased efforts to protect and enhance the quality of our environment.

But expressions of concern, while wholly commendable, must be supported by substantial action programs to accomplish the tasks necessary to protect the environment.

I know that all of us in this room join in the hope that the President will soon submit to the Congress bold and specific environmental program recommendations, and will provide for their speedy implementation. One good step toward such implementation was the Administration's announcement last week approving the release of the $800 million appropriated by the Congress last year, and signed into law by the President on December 11, for waste treatment plant construction grants.

The Conservation and Natural Resources Subcommittee this week turns its attention to action programs which must be developed to restore the quality of our environment during the decade of the 1970's—what must be done *now* to stop and reverse the tide of environmental degradation which is rapidly engulfing our Nation.

We shall be hearing from representatives of conservation groups, architectural and planning groups, public health groups, and the labor movement. Their testimony and recommendations will help us to explore existing and imminent environmental problems; to discover what must be done to solve them; to examine the effectivness and efficiency of existing Government policies and programs; and to develop proposals for new programs where needed.

Among the questions we shall endeavor to answer this week are:

1. What must government do to strengthen or redirect its existing programs for environmental protection and improvement?

2. Which programs should be expanded, curtailed, or eliminated? How? Why?

3. How can programs at all levels of government be better coordinated to achieve maximum economy, efficiency, and effectiveness?

4. What would be the cost of new programs to protect and enhance the quality of the environment? Who should administer such programs?

5. How can we encourage more public participation in the consideration of proposals that affect the environment?

6. How can we make public agencies and officials more responsive to environtmental concerns in the administration of environmental programs?

7. Can the public effectively protect our air and water through class action litigation?

8. How should the Federal grant programs be strengthened to help protect and improve environmental values?

By the end of the week, we hope we shall have pinpointed more clearly the environmental problems toward which all of us—in government at all levels, in private agencies, and as individuals—must turn our energies if we are once again to have clean waters, clear skies, and a habitable earth in this country that we love.

I will first ask Dr. Miller B. Spangler, director of the Center for Techno-Economic Studies, National Planning Association, and Thomas L. Kimball, executive director of the National Wildlife Federation, to step forward to the witness table.

Both of you gentlemen, on behalf of your organizations or individually, have submitted very comprehensive statements which will be received in full into the record.

We would now like to ask you to proceed in your own way to assist this subcommittee in determining what action programs are going to be necessary in the years ahead.

Dr. Spangler.

STATEMENT OF DR. MILLER B. SPANGLER, DIRECTOR, CENTER FOR TECHNO-ECONOMIC STUDIES, NATIONAL PLANNING ASSOCIATION

Dr. Spangler. Despite growing affluency in our society, we suffer increasingly from water, air, and land pollution, noise pollution and esthetic pollution. These trends must and can be reversed. In the planning of action programs to halt environmental degradation and to restore natural resources to a purer or better managed state, planning efforts must be concentrated on the most controversial parts of the problem. One such issue is whether our society will be willing to bear the high costs of curbing pollution and enhancing environmental quality. It is felt that our society is, in fact, coming to the conclusion that it can afford to spend whatever sums will prove necessary in halting the degradation of our natural resources plus substantial additional funds for restoration and enhancement of environmental quality.

For example, in going from a workweek averaging 70 hours in 1850 to a 40-hour workweek today, Americans have already demonstrated a willingness to sacrifice hundreds of billions of dollars in personal annual income to improve the quality of living. Yet today, the enjoyment of leisure has been seriously impaired by the degradation of environmental quality and the limitations this imposes on recreational opportunities. Thus, I am convinced that our society will, in the not-too-distant future, grow in its willingness to sacrifice even $10 billion or more per year in personal disposable personal income—if this price proves necessary—in order to gain the advantages of improved environmental quality.

However, to accomplish this will require that other progam planning difficulties be solved in an effective and judicious manner, especially the distribution of program costs. In the case of air pollution caused by automobiles, it is expected that their owners will bear the cost of technologies to reduce this pollution. As for industrial air and water pollution, it is anticipated that much of the cost of pollution abatement measures will be passed along to consumers. In some instances, the market structure will not permit elevation of prices to cover increased costs, and the profit squeeze may force certain plants—particularly older ones—to close down. The threatened loss of jobs and dislocations to local economies may require some form of tax relief measure to bear part of the cost of pollution abatement measures.

In the case of improved sewage treatment and solid waste disposal systems, it is desirable that local governments be required to bear a major fraction of the costs. However, some cost-sharing by State and Federal Governments would be constructive in encouraging the necessary regional cooperation among the multiplicity of divided political jurisdictions, particularly wherein the localities bearing costs are not the exclusive—or even principal—beneficiaries of the pollution abatement measures.

Indeed, a great deal of cooperation will be required involving individuals, business concerns, and local, State, and Federal governments to solve pollution problems. The automotive industry is developing cleaner burning internal combustion engines. In large metropolitan areas where buses, taxis, and commercial trucks operate primarily within urban limits, it may be desirable to require these to shift to electrical or steam-driven engines which produce little or no air pollution. More emphasis is needed on improved mass transit systems to encourage fewer persons to drive automobiles to work.

Also, in controlling water pollution, a variety of measures are needed: The banning of phosphates in detergents and the use of DDT or other agriculture chemicals which do not readily decompose; the installation of secondary and tertiary sewage treatment plants; the separation of storm sewers from municipal sewage-gathering systems; the extension of sewage effluent pipes to a greater distance from shore in the Great Lakes or marine coastal areas, and the curbing of industrial forms of pollution that are especially injurious to marine life.

In solid waste disposal, more emphasis is needed on technologies which improve the economics of recycling waste materials for reuse. Legislation or the imposition of taxes could be useful tools in discouraging the use of objectionable packaging materials which are costly to dispose of. The disposal of solid wastes in the ocean, if carefully controlled, could provide an appropriate solution. (About 50 percent of the U.S. population lives within the coastal counties.)

In general, the priorities of action programs to control different forms of pollution and to enhance environmental quality should be determined by cost-benefit analyses. In some cases, the injury to society is already so great and so obvious that such studies may not be required or can be of a cursory nature. In more complex cases involving substantial uncertainty whether benefits will exceed costs—and particularly those where the benefits are regionally dispersed—one can expect sluggish political processes to delay action programs. In these instances, Federal measures, including feasibility studies and other research, can be especially helpful in determining the need for, and priorities to be accorded to, alternative action programs.

Measures to prevent pollution and environmental degradation are often less expensive than restoration measures. This was especially evident in a recent study we performed for the Marine Sciences Council on "The Role of Marine Sciences in the Multiple Uses of the Coastal Zone of Lake Erie and Lake Superior." A conclusion of this study is that Lake Erie is far from being a dead lake and it is possible through pollution control and restoration measures to greatly enhance the recreational and other coastal zone uses of the lake, but at very great expense.

A matter of controversy is whether the state of the art of technology is adequate to proceed with pollution control and restoration measures without further delay. In most cases, technologies are sufficiently developed to control pollution and thus there is little excuse for delaying action programs. Moreover, the early implementation of programs and the enforcement of antipollution legislation already on the books will serve as desirable stimulants for private enterprise to accelerate R. & D. to improve the cost-effectiveness of pollution abatement technologies.

This is not to say that all need is past for federally sponsored R. & D. in pollution and restoration measures. Continuing research is needed to ascertain the adverse effects of different kinds of pollutants on man, marine life, and other forms of wildlife which are bound together in complex ecologies. In the case of thermal pollution resulting from the effluent cooling waters of nuclear and thermoelectric powerplants, research is needed which would indicate how the appropriate location of these plants might actually benefit swimming, fishing, and aquaculture by elevating temperatures of cold coastal waters.

One of the important tasks for R. & D. is to reduce the present high cost of pollution control measures, be they air, water, or land pollution measures. For example, it is estimated that the cost of solving the water pollution problem of Lake Erie is around $4.5 billion. While progress should not be delayed while seeking lower cost technologies, nevertheless, expenditures on pollution monitoring and pollution abatement technologies are likely to be ongoing expenses of society for all future time. Accordingly, it is necessary to proceed with programs of Federal support for R. & D. to improve these technologies. Local and State governments generally neglect this kind of R. & D. and private enterprise has often not proceeded with R. & D. because of market uncertainties.

Some suggested areas for federally sponsored R. & D. in pollution control and in enhancing environmental quality would include:

1. Improved techniques for controlling beach erosion.
2. The development of artificial reefs or habitats which would serve as protected breeding grounds and nurseries for marine life, especially in places where landfills of coastal marshlands or estuaries have already destroyed the breeding grounds of wildlife.
3. Aquaculture and genetic research which would develop improved strains of harvestable marine life which could better withstand the environmental conditions found in various lakes and estuaries.
4. Methods of predicting the likely impact on increased yields of marine life in complex ecosystems resulting from pollution control measures and advances in aquaculture.
5. Better techniques of evaluating the social and economic benefits of pollution control and restoration measures.
6. Better geological and geophysical knowledge of subbottom strata in the vicinity of offshore oil developments, plus other technological information which would reduce the risk of accidental oil seeps.
7. Development of cost-effective technologies for minimizing damage to marine life and wildlife, beaches, and personal property from accidental oil spills.
8. Research on pollution problems of Arctic Alaska, including: The adverse effects of impregnation of soils with industrial and urban wastes; the capacity of Arctic waters to absorb and decompose wastes; and ecological damage by ground transportation.
9. Research and development of technologies of utilizing marine resources so as to conserve dwindling land resources.

It is essential that a strategy of federally sponsored R. & D. be developed within an interdisciplinary framework. In this regard, the methods of "technology assessment" are particularly desirable, inasmuch as these involve a systematic effort to foresee both the socially beneficial and potentially harmful impacts of various technological developments and seek to identify strategies for attaining more socially optimal results. Such an analytical approach will prove invaluable in making public agencies, officials, and taxpaying citizens more responsive to environmental concerns and the acceptance of essential action programs.

(Dr. Spangler's prepared statement follows:)

PREPARED STATEMENT OF DR. MILLER B. SPANGLER,[1] DIRECTOR, CENTER FOR TECHNO-ECONOMIC STUDIES, NATIONAL PLANNING ASSOCIATION

SOME KEY ISSUES IN THE PLANNING OF ACTION PROGRAMS FOR THE CONSERVATION OF NATURAL RESOURCES AND THE ENHANCEMENT OF ENVIRONMENTAL QUALITY

THE CHALLENGE OF GROWING PROBLEMS OF POLLUTION AND ENVIRONMENTAL DEGRADATION

The growth in population and the expansion of economic activity in the United States made possible by advances in science and technology have been a mixed blessing insofar as the quality of many of our most valuable natural resources

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[1] The opinions expressed in this commentary are those of its author and not the National Planning Association. A number of the conclusions are derived from insights gained in previous and current work of the NPA Center for Techno-Economic Studies including:

have suffered degradation. This includes our water and coastal zone resources, fishery and wildlife resources, forestry and soil resources, and the air we breathe. We suffer increasingly from water pollution, air pollution, land pollution, noise pollution, and esthetic pollution. These trends must and can be reversed.

Yet, the halting of *abuse* to our natural resources does not signify a halting of their *use*. Quite to the contrary. For example, were air, water, and other forms of pollution halted in our coastal zone, this could be a significant boon to recreational pursuits and related economic activities. The curtailment of objectionable landfills which destroy the marshlands that serve as breeding grounds for fish and other wildlife could improve commercial fishing and aquaculture as well as recreational pursuits. Likewise, the use of advanced methods of forestry and soil management practices can expand and prolong the use of these resources.

In the planning of action programs to halt environmental degradation and to restore natural resources to a purer or better-managed state, one must concentrate planning effort on the most controversial parts of the problem:

(1) How much can we afford to spend?

(2) How should the costs of these programs be distributed as between business firms, consumers, and local, State, and Federal governments?

(3) What specific action programs are required and how should responsibilities for these be shared between different levels of government and the private sector?

(4) What priorities and time phasing should be assigned to action programs?

(5) How ready is the technology to achieve environmental quality objectives and what further research is desirable?

The outlook for willingness to bear essential costs

With regard to the first of these points of controversy, it is felt that our society will ultimately come to the conclusion that it can afford to spend whatever sums will prove necessary in halting the degradation of our natural resources plus substantial additional funds for restoration and enhancement of environmental quality.

The National Planning Association has projected the U.S. gross national product to grow from $989 billion in 1970, to $1,466 billion in 1980 at constant 1970 prices—or an average annual increase of $48 billion.[2] It appears that only a modest fraction of this annual increment will be required to meet our objectives for conserving our resources and enhancing our environment, which are so important to the quality of living in America. While this will mean a significant reduction in the growth of real personal disposable income, Americans have made even greater sacrifices in income in order to improve the quality of living. I refer to the reduction in the workweek from an average of 70 hours in 1850 to less than 40 hours per week today. It seems clear that our society has elected to trade off several hundred billion dollars per year in personal income in order to work fewer hours and increase the quality of living through expanded leisure time. Yet today, the enjoyment of leisure has been seriously impaired by the degradation of environmental quality and the limitations on recreational opportunities. These unfortunate developments are now becoming of greater concern to the quality of living than further growth in the amount of leisure time, or even growth in personal income.

Thus, I am convinced that our society will, in the not-too-distant future, grow in its willingness to sacrifice $10 billion or more per year in disposable personal income—if this price proves necessary—in order to gain the advantages of improved environmental quality.

Distributing program costs

However, to accomplish this will require that other program planning difficulties be solved in an effective and judicious manner. On the matter of distributing program costs, it is envisioned that a mixed strategy will work best. Since the

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A Preliminary Review of Alternative Federal Measures of Encouraging Private Investment Enterprise in Marine Resource Development (Commerce Clearinghouse Publication No. PB–178–203, May 1968, 140 pp.); *The Role of Marine Sciences in the Multiple Uses of the Coastal Zone of Lake Erie and Lake Superior* (Commerce Clearinghouse Publication No. PB–185–163, June 1969, 302 pp.); *Techno-Economic Aspects of Marine Resource Developments* (under contract to the National Science Foundation, to be published, 1970); and *Long Range Forecasts of Activities in the Marine Environment with Implications for Planning Coast Guard Search and Rescue Operations* (in preparation). See also, Miller B. Spangler, *A Commentary on Planning Problems and Issues in Water Resources Management*, a statement prepared for the National Conference on Water Needs and Problems of the United States, sponsored by the National Water Commission, Washington, D.C., Nov. 6–7, 1969.

[2] NPA Center for Economic Projections, *National Economic Projection Series Report No. 69–N–1* (to be published March 1970).

majority of air pollution is caused by automobiles, it is expected that the owners of these vehicles will bear the primary cost burden of technologies to reduce pollution. In the case of industrial air and water pollution, it is anticipated that much of the cost of pollution abatement measures will be passed along to consumers in the form of higher prices of products or services. In those instances where this pattern of market competition will not permit prices to be raised to cover the increased costs, the profit squeeze may force some plants—particularly older ones—to close down. The threatened loss of jobs and dislocations to local or regional economies may require some form of subsidy or tax relief measure to assist these plants to bear the cost of pollution abatement measures.

In the case of improved urban sewage treatment and solid waste disposal systems, it would seem preferable that local governments and, hence, local taxpayers be required to bear a substantial fraction of the costs. However, some cost-sharing by State and Federal governments in implementing such measures would seem desirable in cases where their cost is unduly great and the benefits of pollution abatement are shared over a wider region, especially by downstream communities. Federal funds, in particular, can provide a valuable means of accelerating progress in pollution abatement by encouraging the necessary regional cooperation among the multiplicity of divided political jurisdictions.

The need to develop specific action programs

With regard to specific action programs, a great deal of cooperation will be required involving individuals, business concerns, and local, State, and Federal governments. While the automotive industry can develop automobiles, trucks, and buses that produce less air pollution, their growing numbers may offset the advent of cleaner-burning internal-combustion engines. In some very large metropolitan areas where buses, taxis, and commercial trucks operate primarily within urban limits, it may be desirable to require these to shift to electrical or steam-driven engines which produce little or no air pollution. Also, improved mass transit systems would encourage fewer persons to drive automobiles to work.

In the case of water pollution, a wide variety of measures are needed including: The banning of phosphates in detergents and the use of DDT or other pesticides or herbicides which do not readily decompose; the installation of secondary and tertiary sewage treatment plants; the separation of storm sewers from municipal sewage-gathering systems; the extension of sewage effluent pipes to a greater distance from shore in the case of the Great Lakes or marine coastal areas; and the curbing of industrial forms of pollution that are especially injurious to different forms of marine life.

Solid waste disposal problems will be eased by technologies which will make it economically advantageous to recycle the use of waste materials. It may also be desirable to legislate against the use of objectionable packaging materials such as nonreturnable bottles which are costly to dispose of. In coastal locations the disposal of solid wastes in the ocean, if carefully controlled, may provide an appropriate solution to this problem.

It must be emphasized that the full benefits to society will not be felt in the case of water pollution abatement measures unless additional programs are mounted which will restore or enhance the environment. This is necessary to promote recreational uses and to facilitate the growth of desirable marine life or other wildlife in the coastal zone. The development of artificial islands through carefully controlled landfills in certain areas could be a boon in this regard as well as the restoration of sands to certain beaches and the implementation of technologies to control beach erosion.

Establishing priorities for action programs

In general, the priorities and time-phasing of action programs to control different forms of pollution and to enhance environmental quality should be determined by cost-benefit analyses. In some cases, the injury to society is already so great and so obvious that such studies may not be required or can be of a cursory nature. In more complex cases involving various kinds of uncertainties over benefits relative to costs—and particularly those where the benefits are regionally dispersed—one can expect rather sluggish political processes to delay action programs. In these instances, Federal measures including feasibility studies and other research can be especially helpful in determining the need for, and priorities to be accorded to, alternative action programs. In the case of the Great Lakes and other international bodies of water, the Federal role will be especially important in developing appropriate action programs in coordination with foreign governments, as well as local and State governments.

It should be noted that measures to prevent pollution and environmental degradation are often less expensive than restoration measures. This was especially evident in a recent study performed for the National Council on Marine Resources and Engineering Development by the NPA Center for Techno-Economic Studies on "The Role of Marine Sciences in the Multiple Uses of the Coastal Zone on Lake Erie and Lake Superior." A conclusion of this study is that Lake Erie is far from being a dead lake and it is possible through pollution control and restoration measures to greatly enhance the recreational and other coastal zone uses of this lake, but at very great expense.

The adequacy of technology and the need for additional research and development

Another matter of considerable controversy is the availability and adequacy of current state-of-the-art technology to proceed with pollution-control and restoration measures without further delay. In most cases, technologies are already available which will serve to arrest pollution and thus no excuse is presented for delaying action programs. Moreover, the early implementation of action programs and enforcement of antipollution legislation already on the books will serve as a desirable stimulus for private enterprise to accelerate research and development to improve the cost-effectiveness of pollution abatement technologies including pollution monitoring devices.

However, this is not to say that all need is past for federally sponsored R. & D. in pollution and restoration measures. Continuing research is needed to ascertain the adverse effects of different kinds of pollutants on man, marine life, and other forms of wildlife which are bound together in complex ecologies. In the case of thermal pollution resulting from the effluent cooling waters of nuclear and thermoelectric powerplants using fossil fuels, more research is needed which may indicate how the appropriate location of these plants might benefit swimming, fishing, and aquaculture by elevating temperatures of cold coastal waters.

One of the important tasks for R. & D. is to reduce the present high cost of pollution-control measures—be they air, water, or land pollution measures. For example, it is estimated that the cost of solving the water pollution problem of Lake Erie is around $4.5 billion. While progress should not be delayed while seeking lower cost technologies, nevertheless expenditures on pollution monitoring and pollution abatement technologies are likely to be ongoing expenses of society for all future time. Accordingly, it is desirable to proceed with sound programs of Federal support for R. & D. to make these technologies more cost effective including advances in technologies involving environmental restoration or enhancement programs. Local and State governments generally neglect this kind of R. & D., and private enterprise has not often proceeded with certain essential kinds of R. & D. because of market uncertainties.

Some suggested areas for federally sponsored R. & D. in pollution control and in enhancing environmental quality would include:

(1) Improved techniques for controlling beach erosion and the removal of obstructions which prevent nature from replenishing beach sands under the transport of littoral currents.

(2) Better methods of reducing pollution effects of landfill operations and to establish principles for the offshore location of artificial islands which would not impair the quality of coastal beaches and the breeding grounds for marine and other wildlife.

(3) The development of artificial reefs or habitats which would serve as protected breeding grounds and nurseries for marine life in places where landfills of coastal marshlands or estuaries have already destroyed the breeding grounds of wildlife.

(4) Aquaculture and genetic research which would develop improved strains of harvestable marine life which could better withstand the environmental conditions found in various lakes and estuaries.

(5) Methods of assessing or predicting the likely impact on increased yields of marine life in complex ecosystems due to implementation of pollution-control measures and advances in aquaculture.

(6) Better techniques of evaluating the social and economic benefits of air, water, and land pollution-control measures and restoration measures.

(7) Measures to improve the circulation of water in lakes or estuaries to alleviate stagnation or stratification of waters such as exists in the western end of Lake Erie.

(8) Better geological and geophysical knowledge of sub-bottom strata in the vicinity of prospective offshore oil and gas developments.

(9) Improved understanding of the inadequacies of technologies in oil tanker construction and operations which may lead to oil spills, and the same for technologies of offshore drilling and production of gas and oil.

(10) Development of cost-effective technologies for containing or minimizing the undesirable effect to marine and wildlife, to beaches, and to personal property resulting from accidental oil spills from whatever cause.

(11) Research on pollution problems of Arctic Alaska including: the adverse effects of impregnation of soils with industrial and urban wastes; the capacity of arctic waters to absorb and decompose wastes; the extent of ecological damage by ground transportation and methods for alleviating adverse effects; and improved methods of treatment of urban and industrial wastes.

(12) Research and development of technologies of utilizing marine resources so as to conserve dwindling land resources.

Because of the complexity of physical, economic, institutional, social aspects of natural resource and environmental problems it is essential that a strategy of federally sponsored research and development be developed within an interdisciplinary framework. In this regard, the methods of "technology assessment" are particularly desirable inasmuch as these involve a systematic effort to foresee both the socially beneficial and potentially harmful impacts of various technological developments and seek to identify strategies for attaining more socially optimal results. Such an analytical approach will prove invaluable in making public agencies, officials, and taxpaying citizens more responsive to environmental concerns and the acceptance of essential action programs.

Mr. REUSS. Thank you, Dr. Spangler.

Mr. Kimball?

STATEMENT OF THOMAS L. KIMBALL, EXECUTIVE DIRECTOR, NATIONAL WILDLIFE FEDERATION

Mr. KIMBALL. I am Thomas L. Kimball, executive director of the National Wildlife Federation, a private group which hopes to achieve its goals through educational means. We have approximately two and a half million members and affiliates in 50 States.

Mr. Chairman, may I first compliment you and the more than 85 Members of the Congress who recently issued a call for designation of the 1970's as the Environmental Decade. Your committee's efforts to explore the ways and means to stop and then reverse the trend of environmental degradation is most commendable. The National Wildlife Federation welcomes an opportunity to make this contribution to your efforts.

The National Wildlife Federation believes that the quality of life, indeed the continuation of life, on this planet we call Earth, depends on man's stewardship of the environment—particularly those vital components essential to life, air, water, and soil.

In 1969, the National Wildlife Federation developed the first index on environmental quality, which we have called our "National E.Q." With your permission, Mr. Chairman, each member of your committee will be provided with reprints from the magazine "National Wildlife," which gives the conclusion of our research efforts and the judgments rendered as to the present status of the Nation's environmental quality.

(NOTE.—A significant portion of "The First National Wildlife Federation Index of Environmental Quality" is color work which could not be reproduced in these hearings. The index is in the subcommittee files.)

Our survey and judgments concluded that conditions revealed by the 1969 environmental quality index of America were "poor," and that the trend is getting worse. And that unless America awakens, we and our children will be in deep trouble. America's land and waterscape is beginning to look very old for a country so young.

The 34th annual meeting of our organization will be held in Chicago on March 20–22. The theme of our conference will be "The 1970's—The Do or Die Decade." This is but another way of expressing our belief that we must solve our degradation problems in the 1970's or there is a real probability that we will never solve them. Never before in the history of our Nation have we had a wider variety of legislators, policymakers, organizations, and citizens deeply concerned about the degradation of our environment, and, more importantly, willing to do something about it.

This conclusion is not a mere assumption, but is based upon factual data from a public opinion survey conducted for our organization by the Gallup organization. The details of the survey will be made available for committee study, but the most important conclusion established the fact that four out of five Americans are concerned about what is happening to our environment, and, even more importantly, three out of four are willing to pay something more in addition to already overburdensome taxes for action programs to do something about it.

The National Wildlife Federation also engaged the Harris organization to find out how much the average American is willing to pay to improve the environmental conditions. A copy of the details of this survey also will be made available for the committee's perusal. A summary of these findings assure that the majority of the people of the United States are willing to pay some of the additional cost for improving the quality of the environment. Based on this principle, we hope that Congress will move ahead in funding those action programs designed to eliminate our past environmental mistakes and to assure that others will not be made or continued in the future.

In its news release of January 16, the committee invited comment on a number of questions which must be resolved if we are to adequately protect and restore our Nation's environment.

In response to the question, "What must the government do to strengthen or redirect its existing programs for environmental protection and improvements?" the following commentary and suggestions are offered for the committee's consideration:

In the eyes of most conservationists, governmental interests and effort in resource and environmental problems is calibrated in terms of money appropriated for action programs. Therefore, in order to convince the public the Federal Government is sincere in its expressed desire to clean up the environment, the executive and legislative branches of the Government must reevaluate the priority of the respective programs which account for the expenditures of the American taxpayers' dollars. The fact that we are now spending only one-sixth of what we pay on interest on our national debt on natural resource programs is evidence of the pitiful priority that environmental programs receive when competing with all of the other national programs.

As a specific case in point, Congress now appropriates approximately $124 million annually to the Land and Water Conservation

Fund. This figure represents the total Federal commitment to meeting the park and outdoor recreation needs of the people of the United States. To make matters worse, the President impounds a sizable share of these appropriated funds as an anti-inflation measure. Yet the U.S. Park Service now requires $280 million to acquire lands in presently authorized new parks and recreation areas and another $180 million to eliminate the inholdings in our older parks.

As a consequence of this lack of funding and interest by the Congress, we now have cities being built within the boundaries of Glacier, Yosemite, and Sequoia National Parks, with little or no zoning requirements and the real probability of urban slums eventually developing within our most scenic national treasures.

The Federal Government's scenic commitments to acquire wetlands in an effort to establish our waterfowl population is way behind schedule and may never be completed. Ten years ago Congress authorized the acquisition of two and a half million acres of wetlands. As of today, only one and a quarter million acres have been acquired. Over the years the average annual purchase of these wetlands by the Federal Government approached 6,000 acres per year. Last year—this gives you some indication of the size of the Government effort—a private organization, the Nature Conservancy, purchased 21,000 acres of wetlands.

Our recent public opinion survey shows that over 97 percent of the people are not in agreement with the priorities of public expenditures. Individuals who were in disagreement with Federal program priorities were asked where the funds should come from, from present programs, in order to increase the money available for environmental improvement.

The committee will note that defense and space were the primary targets of those who believe there should be less emphasis on these programs and more on environmental improvement.

Just last night, in the February 1 Evening Star newspaper, there was an article covering the cost of remodeling the aircraft carrier *Midway*—some $204 million. And this is more money than the Federal Government will allow to be actually spent for all of the land acquisitions to meet the Nation's park and outdoor recreation programs.

In the event that Congress, in its wisdom, determines the cost of improving the quality of the environment should be added to rather than financed from, a reallocation of our present requirements, then policymakers should feel the public pulse and determine how much the individual is willing to pay in order to accomplish this goal we all seek.

No one likes additional taxes, but most reasonable people not only would expect some reallocation of funds from other less popular Federal expenditures, but would also be willing to pay some added taxes in order to halt environmental degradation and meet the Nation's recreation needs.

There have also been some public expressions that reorganization of Federal bureaus would improve efficiency and effectiveness.

Reorganization of Federal bureaucracies will never clean up 1 cubic foot of air nor 1 gallon of water. However, there is merit in carefully scrutinizing the overlapping and duplicated functions of all resource management agencies. Eliminating duplicity and conflicting authority should be pursued with vigor, in spite of committee jurisdictional squabbles and other specal interest problems.

Maximum economy could be achieved if those agencies dealing with the environment were placed in a bureau where their programs could be coordinated and decisions implemented with efficiency and effectiveness.

The Federal Water Pollution Control Administration has estimated the cost in the next 5 years of cleaning up our Nation's water supply would total between $26 and $29 billion; $8 billion for municipal treatment works, $6.2 billion for sanitary sewer construction, $2.6 to $4.6 billion for industrial waste treatment, $1.8 billion for industrial cooling equipment, and $5.3 billion for municipal and industrial operating and maintenance costs.

(NOTE.—The Federal Water Pollution Control Administration was renamed the Federal Water Quality Administration by sec. 110 of the Water Quality Improvement Act of 1970 (act of April 3, 1970), Public Law 91–224.)

If this estimate is correct, and the inflationary spiral is rising almost hourly, the President's allocation of $10 billion or more may prove to be too little and too late.

The staggering cost of air pollution control abatement, of stepped up soil conservation activities, and improved forestry practices, as well as increased and improved wildlife habitat, are not included yet in the Administration's commitment to environmental improvement.

And when we total the cost of esthetic considerations for highway construction, scenic and esthetic costs of the proper location of rights-of-way, of added parks, natural areas, open green spaces, and historical sites, access to public lands and to public beaches, the cost of the high quality environment is staggering.

The committee is well aware of the ever-increasing militancy of the public in demanding participation in formulating policy decisions affecting the quality of the environment. Student activists on our campuses have made pollution abatement their major battle cry for the coming years; more public officials, civic and fraternal organizations, and individuals are rallying to the banner of the antipollution war.

The real problem in my view will be to provide adequate communications and meaningful dialog between this tremendous public interest and those who are responsible for public policy determinations.

There is a real danger that policymakers may take hasty, ill-conceived actions in the face of ever-mounting public pressures. Some means should be provided to give responsible answers based upon adequate research to the public on very complex environmental questions. One way in which the Government can improve the credibility gap, and at the same time save considerable money, is to eliminate research operations in all Federal bureaus responsible for management programs.

The public is becoming increasingly skeptical of management and policy decisions based upon research data collected by governmental scientists. Far too often, operating policy directives require researchers to gather statistics to support conclusions already reached. After all, it was the Federal agricultural scientists who told us that DDT was safe. It was the Food and Drug Administration scientists who told us that Thalidimide was safe. It was the governmental scientists who told us cyclamates were safe. It was the governmental researchers who told us that dams and fully controlled streams are the answer to most of our water problems and that we can solve many of the water pollution problems by diluting rather than cleaning up.

What is needed is an independent research arm of the Federal Government which does not report to any operating bureau, perhaps only to the Congress itself, or to the Environmental Quality Council, with a staff of eminently qualified scientists, and a directive from Congress that the facts collected be entirely objective in nature, in order that public confidence may be restored in Federal research activity and ultimate decisions based on the overall public interest rather than limited and specific special interests.

The Atomic Energy Commission, for example, has been charged by the Congress with promoting the peaceful uses of atomic energy, and, at the same time, policing their own efforts. How can the public expect an atomic scientist who is interested in promoting the peaceful use of atomic energy to assure that radioactive wastes or thermal pollution will not degrade the environment, when such a recommendation might make atomic power noncompetitive with other fossil fuels?

We still have major planning authority for our water development programs in construction agencies, such as the Army Corps of Engineers and U.S. Bureau of Reclamation.

How can other resource values be given full consideration within these single-use oriented organizations?

We have a myriad number of Federal agencies, commissions, and advisory groups dealing with water resources. It would appear that a review of the authority, objectives, and functions of each of these groups should be evaluated and the overlapping and contradictory authority and functions eliminated.

Of course, we are counting on the Public Land Law Review Commission to overhaul the hundreds of conflicting land laws which are now on our books. One specific example comes to mind: The repeal of the 1872 Mining Act is in order, and hard rock minerals extracted under the Mineral Leasing Act. Under the provisions of this outdated 1872 mining law, the mineral prospector and developer has priority use of all of our public lands and prevents the Federal regulatory agencies from controlling or continuing to own the surface of mining claims to manage for other valid public purposes after the minerals have been extracted.

We are still administering the bulk of our public domain under the terms of the Taylor Grazing Act, which is another outdated single-use act. This law was enacted in 1937, in response to the lack of management authority for all that remains of our public domain. The time has long since passed when these valuable public lands can be managed primarily for the grazing of domestic livestock. They will soon become, if they are not now, the last remaining vestige of the American tradition of ample space for public outdoor recreational possibilities.

Congress must soon act positively to assure that these public lands are returned to public ownership. Full funding of recreation programs is required to meet the ever-increasing leisure time in our burgeoning population. Future generations will condemn us if we fail to make plans for providing some semblance of open green space and recreational facilities to give them just a taste of good life that we have known.

America is the greatest democracy on earth, and unless we can make the will of the people work in the strongest superpower that the history of the world has ever developed, one of the myriad "isms" will eventually swallow us up.

It is, therefore, essential that our policymakers in the executive and legislative branches of Government develop a practical means to keep the public well informed on important environmental issues. Thomas Jefferson put it rather neatly when he said, "I know of no safe depository of the ultimate powers of society but the people themselves; and if we think them not enlightened enough to exercise this authority with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion."

I have already suggested an independent research arm of the Government to investigate these complex environmental issues and to present their factfindings to the people in order to adequately inform that discretion.

There is little question that in order to accomplish the kind of environment the American people envision, tremendous financial and material sacrifices must be made.

Ever-increasing millions of Americans will ultimately consume a horrendous amount of resources and open space. This means a higher consumption of food, fiber, and fuel, and undoubtedly a reduction in the available space for the pursuit of a quality natural outdoor experience. In order to minimize the impact upon the quality of life, it is essential that the public be constantly and consistently informed as to the long-range plans and programs of Government and specifically how those programs might affect the individual life of a family.

The cost of eliminating the environmental pollution of and the mistakes of the past 150 years is almost incomprehensible. In fact, I predict that we must allocate as much money into this effort as we are now putting into our national defense, if we really intend to accomplish the objective.

Once we are caught up, however, and beginning immediately, we can and should adopt a policy of allowing no industry, individual, municipality, or governmental entity to pollute the environment.

Admittedly we may not be 100 percent effective in cleaning up our past mistakes, but there is really no excuse for making this planet nothing more than just a garbage disposal. I am convinced that American technology can solve any environmental problem, no matter how complex, if we are willing to commit the scientific community and provide the funds for action programs to do the job. After all, we were able to send a man to the moon and back, to split the atom and to put it to a variety of uses, including the possibility of the elimination of the human race with the touch of a button. Why not use our technological knowledge to make a better place for all to live?

In summary, Mr. Chairman, the achievement of a national commitment to clean up environmental pollution and to improve and maintain the quality of the living natural environment will require a superhuman effort on the part of the individual American as well as the policymakers of our Nation.

It appears from reading the minds of the American people as expressed in the public press and the other communications media that there is a national commitment now to this worthy cause.

The reevaluation of our national priorities, as expressed in the presentation of the Federal budget, is in order:

The expenditure of funds for natural resources programs and the improvement of the environment must be elevated from the seventh subbasement priority in the fiscal system.

In addition, the public must be taken into the confidence of policymakers and informed as to what the problems are and how much additional funding will be required from the taxpayers in order to complete the task.

I am convinced that you will find the necessary public support to do an adequate job in both the reallocation of funds in the present budget, as well as increased funds for getting on with a job that is long overdue.

Secondly, we need to minimize the amounts of funds expended for establishing new bureaus and commissions, which do little more than duplicate established organizations within the Government and expend money that might otherwise be allocated for programs which really clean up air and water or directly relate to the actual improvements of environmental conditions.

Thirdly, there must be a national policy established, or more importantly, stringently enforced, which requires individuals, municipalities, and industry to return renewable resources that are utilized to the mainstream of nature in the same quality as when they were used—water to the stream as clean as it was taken out; emissions into the air as clean as the intakes; soil use that does not contaminate or pollute the environment nor increase the possibility of erosion; improved forest management with a priority for watershed protection; proper planning of our ever-expanding cities and suburbs to provide open green space and built-in quality of living that the American people are coming to expect from the most enlightened society the world has ever produced.

Mr. Chairman, the National Wildlife Federation and its over 2½ million members have made a commitment to the improvement of the quality of our life, as it relates to the improvement of the natural environment. We stand ready and willing, as an educational organization, to keep the American citizens fully informed on research and environmental policies and programs that are designed to maintain the good life for all Americans.

Thank you very much for the opportunity of making these comments.

Mr. Reuss. Thank you, Mr. Kimball.

You referred in your testimony to the most helpful index constructed by the National Wildlife Federation last summer on just where we stand regarding the quality of our air, land, water, forestry, and so on. That has already been of great help to this subcommittee. It was mounted on a board before us when we had our environmental decade meeting in early December.

I think it is the opinion most of us on this subcommittee that it would be extremely useful for the newly created Presidential Environmental Quality Council to issue annually such an environmental index. Would you agree with that?

Mr. Kimball. I certainly agree, Mr. Chairman, that this would be of great help in informing the people on just where we stand.

Mr. Reuss. With your permission, this subcommittee would like to take your excellent first try at an index last summer and recommend to the Environmental Quality Council that it use it as a model for its annual indexes.

Mr. Kimball. This would be fine. And would you ask them to devote their big technological guns to refining this? This is admittedly a very preliminary effort on our part to tell people where we stand. But with the great amount of research activity and information that the Government has, and could undoubtedly collect together, I am sure they could come up with some yardsticks that could be measured from year to year.

For example, we asked the question of how many miles of our Nation's streams are polluted. We couldn't get the answer from any source. I am sure that it can be collected and put together from the information that the States have and the Federal Government has, but it just hasn't been done.

Then, we need a measurement of how much water is cleaned up from year to year. This is really what I would like to know, and I am sure the people of America would like to know—just how much progress we are making from year to year.

If we have this, on all of these problems that relate to our environment, then we would really know whether we are making any progress or not, rather than our just being suspicious that we are continually falling back.

(Subsequently, Chairman Reuss wrote to Mr. Russell E. Train, Chairman of the Council on Environmental Quality, as follows:)

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C., March 17, 1970.

Mr. RUSSELL E. TRAIN,
Chairman, Council on Environmental Quality,
Department of the Interior, Washington, D.C.

DEAR MR. TRAIN: I would like to call your attention the enclosed copy of "Index of Environmental Quality," which was published last year by the National Wildlife Federation. You may find this publication helpful in preparing the Environmental Quality Report which your Council is required, under section 201 of the National Environmental Policy Act of 1969 (Public Law 91–190: 83 Stat. 852, 854), to transmit to the Congress annually, beginning July 1, 1970.

The federation's "Index of Environmental Quality" is, of course, much more simplified and terse than your report will, or should, be in order to comprehensively discuss the five major areas specified in section 201 of the act. However, the federation's report, which sets forth the present level and status of environmental quality with respect to air, water, soil, forests, wildlife, and minerals, does so very graphically and in a manner that makes starkly apparent to the public its conclusion that the 1969 Environmental Quality Index is "poor," that the trend is getting worse, and that unless America awakens, we and our children may be in deep trouble.

Sincerely,

HENRY S. REUSS,
Chairman, Conservation and Natural Resources Subcommittee.

Mr. Reuss. Also in your testimony, you spent some time on your estimate of the Federal contributions that will be required in the next 5 years, let's say, to control and prevent water pollution caused by inadequately treated municipal waste plant discharges and industrial wastes, combined sewers, and so on.

What would you envisage as the required cost of the Federal contribution to the fight on water pollution over the next 5 years?

Mr. KIMBALL. Here again, I am not sure just what the total Federal commitment is at present. If it were 50 percent, for example, of the total cost of $26 billion plus, this would amount to some $13 to $18 billion.

If it is more than that, then it would have to be whatever that additional commitment is above the 50 percent.

It is my understanding that, under certain conditions, some municipalities can qualify for a 50-percent commitment from the Federal Government for the cost of treatment facilities. In this case, it would have to be correspondingly larger.

Mr. REUSS. You are talking about the next 5 years?

Mr. KIMBALL. Yes, the next 5 years.

Mr. REUSS. And you say that your recommended Federal contribution to State and local governments for the erection of water pollution prevention and control devices should be at the minimum $18 billion over that 5-year period?

Mr. KIMBALL. This would be based on a 50-percent sharing of the cost.

Mr. REUSS. And you think there should be a 50-percent sharing?

Mr. KIMBALL. I think so; yes.

Mr. REUSS. From what you have said, then, you regard as wholly inadequate, for the next 5 years, a Federal contribution of only $4 billion as compared to $18 billion?

Mr. KIMBALL. I hate to put it in that context. I would say that the public here again should be brought into determining policies of this nature, because eventually the average citizen is going to have to pay this cost—regardless of whether it is a Federal or State or local share.

You know we don't just print money; somebody has to pay for all of these things. So, if the people agree, we ought to clean up our water. We understand what the costs are going to be. Let's devise some type of a formula and make sure everybody knows what the total cost is and then get on with providing the money to do it.

Mr. REUSS. Who pays for it, however, is important. If it is left to the local government, for example to provide all of the antiwater pollution work, the cost would fall mainly on the homeowner, who has been stretched rather thin by the property tax.

The tax base borne by a higher level of government is a more efficient and progressive one.

Mr. KIMBALL. The reason I suggested at least 50 percent as the Federal share is that the greater part of the total tax dollar is collected by the Federal Government. And as a consequence, they, I feel, should, in the order of priority of things, put up at least half of the cost of doing the job.

(SUBCOMMITTEE NOTE.—Excerpts from the Harris and Gallup surveys, which were conducted for the National Wildlife Federation and to which Mr. Kimball referred, follow:)

National Wildlife Federation—A Study of the Attitudes of the American Public Toward Improvement of the Natural Environment

INTRODUCTION

In early 1969, the National Wildlife Federation sponsored a Gallup survey which found, among other things, that more than 85 percent of the public is concerned with the condition of the environment. So concerned, three out of four said they would willingly pay increased taxes earmarked for conservation, including 63 percent of those with family incomes under $5,000 per year.

The attached survey, conducted by that other major independent polling organization during the first part of July, found that 97 percent of the American public advocated reallocating Federal expenditures to free more money for environmental protection and cleanup.

Ironically, in spite of the obvious, overwhelming public desire for solving the country's environmental problems, the Federation's recently completed Index of Environmental Quality (EQ) found the United States is still losing the battle against pollution and natural resource depletion.

The Federal Government is the No. 1 environmental protector and janitor. And yet in the face of accelerating environmental degradation and exploding public concern, far less than 1 percent of the Federal budget goes into natural resource programs but they are invariably the first to feel the bite of the economy ax. Programs to solve the Nation's environmental crises too often have turned out to be more eye pollution than fact—apparently designed to take the heat off administrators and politicians by lulling the public into thinking the problems are being taken care of.

But they are not.

The following report shouldn't be interpreted for anything but what it is—a survey of public opinion. But the Federation feels the message therein is clear: The American public wants to move quality of life up on the Nation's priority list. And though "willingness to pay" begs the fundamental fact that we will and must pay for environmental cleanup, it does substantiate public concern.

Please feel free to duplicate in whole or part. Naturally, the National Wildlife Federation would appreciate credit whenever possible.

* * * * * * *

The public's attitude toward current priorities in the Federal budget was measured under two conditions. A portion of the people interviewed (some 900) were handed a card as shown below, and read the following statement: "This card shows the percentage of the Federal budget now being spent for various purposes."

Show card

	Percent
National defense (U.S. military and military assistance)	44
Health, labor, and welfare (retirement, public assistance, economic opportunity)	28
Commerce and transportation (roads, post office, airlines, etc.)	4
Veterans' benefits (compensation, medical, pensions, etc.)	4
Space program	3
International affairs (foreign aid, food for freedom, etc.)	2
Agriculture (farm supports, land and water, agricultural research)	2
Education (aid to education, research)	2
Natural resources (environmental improvement, forests, recreation areas, wildlife, pollution control, etc.)	1
Housing and community development (urban renewal, public housing)	1

They were then asked: "Considering priorities, would you like to see more or less of the Federal money go into each of these purposes?"

The remainder of the sample (500 people) were asked the same question, but without being given the information as to what percentage of the Federal budget is now spent in each category. This allows for a comparison between the groups "with information" as to current budget and "no information" as to current budget—indicating the potential effects if the public were further educated as to the amounts now being spent or natural resources as well as other functions.

The next table indicates the activities in which the public would like to see less Government spending and those in which it would like to see more spending. The majority—both those people given information about current Federal spending and those not supplied such information—would like to see less Federal money spent on international affairs, the space program, and national defense.

The public is split on whether to increase or decrease spending on commerce and transportation; health, labor, and welfare; and agriculture.

A majority of the public would like to see more Federal money go into education, natural resources, veterans' benefits, and housing and community development. Across the board, the American people in 1969 appear to desire the focus to be on the solving of domestic problems and the improvement of the quality of life at home.

Supplying the public with information as to the current allocation of Federal moneys has the effect of increasing the majorities in favor of more spending on natural resources (up to 68 percent) and housing and community development (up to 58 percent), and also increases the number who would like to see less Federal money going into national defense (up from 55 percent to 61 percent).

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Summary and observations.—The data are consistent in revealing greater concern and greater willingness to do something about the natural environment among the more educated and more affluent segments of the public, among those who live in the suburbs surrounding the large metropolitan centers, and among younger adults. These articulate segments of the public could be characterized as having high expectations and demand for a livable environment, and as having a greater than average intellectual awareness of environmental conditions.

People who live in cities, blacks, and persons with lower incomes and education levels show less concern about environmental conditions. At first glance, this appears paradoxical since it is the lesser privileged segments of our society, especially in the inner cities, that one would suspect have greater contact with at least certain forms of environmental pollution and deterioration. However, it appears that some combination of apathy, low expectation levels as regards the natural environment, lack of awareness of the extent of the problem, lack of awareness of its effect on the quality of their own life, and the perception of other problems as being even more severe and pressing produce an apparent low level of concern.

Thus proponents of a greater emphasis on natural resources and environmental cleanup will find their natural allies, at present, among the educated and the affluent.

The high concern of younger adults and late adolescents may well indicate an important shift in the general population's priorities.

Any immediate broadening of the base of support for environmental improvement will require public education to increase awareness of the problem among the lesser educated, lower income portions of our society.

NATIONAL WILDLIFE FEDERATION—THE U.S. PUBLIC CONSIDERS ITS ENVIRONMENT (CONDUCTED FOR NATIONAL WILDLIFE FEDERATION)

(A National Opinion Trends Reports, The Gallup Organization, Inc., Princeton, N.J., February 1969)

SOME HIGHLIGHTS OF THE STUDY

Concern about our natural surroundings.—About half (51 percent) of all persons interviewed stated that they are "deeply concerned" about the effect of air pollution, water pollution, soil erosion, and destruction of wildlife on our natural surrounds. About one-third (35 percent) said they are "somewhat concerned" about the problem and 12 percent said they are "not very concerned." A greater proportion (62 percent) of those who have attended college than of those with less formal education are deeply concerned about these environmental problems. More of the men (50 percent) than of the women (46 percent) said they were deeply concerned. Also more of the people living in the Western and Midwestern States than of those in the East or South are deeply concerned.

Willingness to pay taxes to improve our natural surroundings.—When those interviewed were asked about their willingness to pay additional taxes to improve our natural surroundings, almost three of every four people interviewed said they would be willing to pay something. It was found that those who had said they were "deeply concerned" about our environmental problems were willing to pay more in taxes to help solve the problems than those who did not express as much concern.

The much pressing environmental problem.—When those interviewed were shown a list of problems affecting the environment and asked which one they consider most pressing, replies divided as follows:

	Percent
Air pollution	36
Water pollution	32
Pesticides (chemicals used to kill insects)	7
Preservation of open grass spaces	6
Wildlife preservation (birds and animals)	5
Soil erosion	4

In cities of over 1 million in population, 55 percent said air pollution was the most pressing problem while only 23 percent of those in small communities and rural areas gave this answer. Preservation of wildlife was of greater concern to people in rural areas than to those in the urban areas.

Those interviewed were also asked what they think can be done to correct the problem chosen as most pressing. Results were as follows:

Problem and most frequently mentioned corrective action:

Air pollution—Find way to control auto exhaust; control of chemical and industrial wastes; provide filters, smoke control devices.
Water pollution—Stop industrial pollution; enforce present laws, pass new legislation.
Soil erosion—Plant or maintain vegetation; use proper agriculture methods.
Wildlife preservation—Enforce game laws; reduce hunting; establish wildlife reserves, parks.
Preservation of open green spaces—Set aside land for parks, forests; better zoning.
Pesticides—Use different, improved pesticides; Government controls, laws.

Will it be necessary to limit human population?—The U.S. public is evenly divided as to whether or not it will, at some time, be necessary to limit human population if our present living standards are to be maintained. Younger adults, those who have attended college, and those in the upper income brackets are more inclined to consider limitation of human population necessary than other groups.

Areas thought most pleasant as a place to live.—If a pleasant place to live were the principal consideration influencing the public, there would be a marked reversal of the trend away from rural areas. Those interviewed were shown the following list of areas and asked which of them they think would be most pleasant as places to live. Results divided as follows:

	Percent		*Percent*
Rural area	**30**	**Seashore**	9
Small city	**25**	**Large city**	6
Suburbs	**18**	**Other**	1
Mountains	**15**		

Analyses by size of community show that many big city dwellers have a yearning for smaller places and those inrural areas have no yen for the big city.

Should more land be set aside for conservation purposes?—Three of every four people interviewed favor setting aside more public land for conservation purposes such as national parks, wildlife refuges, bird sanctuaries, and so forth. Young people, those who have attended college, and those in the eastern States are more inclined to this view than other segments of the population.

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WHAT PUBLIC WOULD DO TO CORRECT ENVIRONMENTAL PROBLEMS

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Verbatim examples of answers concerning what might be done to prevent air pollution include—

More Federal money put into this problem.
Get in a specialist and see what he could do to get it corrected.
Move some of the industry to the suburbs instead of in the city.
Maybe if they would take some of these chemical places way out.
If there was some way they could control filtering and doing away with gases if possible.

Education of the general public. Tax according to displacement of the engine instead of weight of cars. Industry tax rebate to encourage new equipment.

Stricter control and very heavy fines on offenders—especially large corporations.

Industry's the guiltiest. Open burning should be stopped by individuals. Perhaps a control center could tell us proper air currents to burn in.

Quit burning old cars—put things on cars to stop the gas pollution.

I wonder if they couldn't have an airplane go over and fumigate everplace.

Get after those technical facilities that cause this in cities primarily.

Leave it up to some government official with that knowledge.

Apply the same sort of policy here as has been applied to problems of national defense—sponsored research, an educational element.

Let the government get more involved in finding the solutions.

Through the Federal Government—by spending money. Make a study of it.

The present laws regarding air pollution should be enforced.

I think it's pretty much up to the State to make and enforce legislation to take care of it. Make whoever is causing this to pay out of the pocket for whatever they're contributing. Each one should take care of whatever he's causing.

Electric cars for less pollution.

Hurry up and put on the market new cars that go gasless; no pollution from cars would help.

They talk about these new cars which wouldn't have so much exhaust. That would be one thing. I've also heard that industry could do something different if they wanted to.

Really I think the auto manufacturers must do something about it. We'll have to pay dearly for it. It's up to the automakers.

Find means of eliminating the poisons going up in the air, like burning garbage, gasoline fumes.

Get rid of cars and do something about airplane fumes.

Take care of the earth first and the moon second.

We'll probably have to start putting factories way out into the suburban areas.

Not allow new buildings that would pollute air to build in cities.

New highways to eliminate truck traffic in communities.

Start new cities where there is land.

Close down places which do not make an honest effort to correct air pollution.

Educate people not to pollute and respect all forms of antipollution requests.

Cut out all the automobiles and go back to horses and buggies.

More chemical research to eliminate byproducts of the combustion process.

Stopping or doing away with carbon monoxide gas in cars.

Be more careful the way they use chemicals and gases and what you have that creates all this.

They should find out something about it. The automobiles and the sewage is terrible.

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Verbatim examples of answers concerning what might be done to prevent water pollution include—

Every city and town should have sewage conversion plants; also laws for factories to quit dumping in rivers.

Find another way to get rid of the scraps from the factories.

Correct industrial waste being dumped into rivers and lakes. Also educate the farmers to take care of streams—insecticides and so forth are allowed to enter them.

A lot taken out of sea water so that it can be used for drinking—a substitute.

Watch fertilizer and application of herbicides and pesticides getting into our water supply.

The only thing I know is to spend a lot of money to try to clean up the rivers and the streams and then restrict the use of them.

Putting responsibility to the ones who are polluting it.

Well all they do is spend money! The factories should clean up their mess and use different soap—no detergent.

They should do something to keep people from throwing things in the water, and companies dumping junk in it.

Quit dumping all these sewers in the streams.

Give industry tax incentive to reduce the amount of pollution dumped into streams and force cities and towns to cease dumping raw sewage into streams.

We need to get on to all our big local plants as they are polluting our streams.

Stop throwing garbage in water—especially factory wastes. Should be treated.

Government should induce, not force, responsible parties.

Stricter law enforcement as to things put into the water by factories, including the packing houses.

Big plants should not dump waste in water we have to use.

Start on largest amount—industrial pollution—and reduce it 50 percent. That's what's killing all the fish.

Put medicine in the water—chemicals.

Clean up areas that drain into main river. Stricter enforcement of litter laws.

All government involved should bear down on those polluting our waters.

Just have better laws.

Quite a bit. Complicated, takes a lot of money. Government control. Federal industry could help.

That would have to be attacked on many fronts. Stricter policing. Well, those persons that are responsible for water pollution will have to be pulled up on a shorter leash.

Get after the industries and have more control on the State level. Have the State control it.

To use more of our tax money for this purpose rather than war. Clamp down on large corporations who pollute waters.

Put teeth in the law; increase fines to be stiff enough so that people won't throw waste and garbage in the water.

Do like Sioux City has done—build the sewage disposal plant. These small towns in Iowa are the big offenders.

More educational programs to direct the people.

Experts are paid to do this.

Curb industry's use of it or make them clean it up. Sewer facilities—improve the private facilities; some of them are inadequate.

Have a committee, and deeply look into the situation and correct it.

* * * * * * *

Verbatim examples of answers concerning what might be done to prevent soil erosion include—

Let the soil conservation people and the county take care of the job.

Plant grass, trees, shrubs, to hold soil.

Starting with the soil—keep it in good condition and other things will be helped.

Work on this more than they have before.

Keep the land planted. Sow or plant trees.

Leave more of our hilly land covered with grass or trees.

Plant more pastures.

Not give raises to public officials and use it for conservation.

Sponsor a program to help make the land richer and more fertile.

Build levees or such every so often to keep soil from washing away.

You would have to control all streams that overflow and do damage. Proper planting of vegetation to control the runoff.

I think problems such as these are best taken care of by following recommendations of a good agriculture college.

People have to learn to take care of property.

I work with soil conservation, erosion control—dam the creeks, contour plowing, cover crops.

Sowing grass and legumes.

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Verbatim examples of answers concerning what might be done to preserve wildlife include—

Doing a pretty good job. Growing population causes loss of birds and animals.

Better hunting controls and better park control—danger of unbalancing nature at present time.

Stricter enforcement of game laws. Control over snowmobiles.

Enforce the laws such as hunting and fishing.

Make sure game wardens enforce the law like they should.

More enforcement of present laws.

Keep areas for this purpose. Have wildlife reserves wherever possible.

Development of areas, such as game preserves.

Cut down on hunting and amount of tags issued. Control fishing and have more reserves, more national parks.

Set aside more places for preservation of wildlife which is becoming scarce.

Shorter hunting season.

Be more careful—not to kill too many.

We can prevent forest fires.

The big industry leased all the land, so we have no wildlife to enjoy. Stop this.

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Verbatim examples of answers concerning what might be done to preserve open green spaces include:

They should set aside more government property for national parks for people to enjoy the outdoors.

More land for parks, and so forth.

More State and Federal parks and reservations maintained.

More sewage treatment, better treatment plants, more national forests.

Could give us more parks for more outdoors.

Create more parks and plant more trees. I miss the forest we had in Germany.

Don't ruin the countryside by building large throughways. Better government control of scenic areas. Don't allow commercialization of them and keep them open for all citizens to enjoy.

Should be some type of control for these junk heaps, billboards, and the ruination in areas by industry and by waste.

Better planning, better zoning.

Limit housing developments and construction and better maintenance of it.

Limit population.

Laws are restricted. Pass legislation for parks and for wildlife reserves. Air and water pollution are also very important. Limit expansion of cities and making parks and so forth.

Zoning.

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Verbatim examples of answers concerning what might be done to prevent the harmful effects of pesticides include—

Stronger government controls over pesticides. I don't use it on this piece of property. I'm a bird feeder.

They should put a restriction on homeowners using pesticides. Government controlled.

Laws to control use of sprays and content of chemicals such as DDT.

Programs for eradication by the Department of Agriculture.

They are not labeled right. They are deadly if not used right. They are improperly advertised and used excessively. The Government should regulate usage.

The person who uses pesticides should try to understand the uses and danger of these. Read directions and use carefully.

Be careful of the kinds used, so there is no harm to people and our foods.

Stop using it.

The sprays and the fertilizers wash into the rivers and kill the fish. It's overdone entirely. Go back to good old manure for fertilizing.

Use some space money maybe for better sprays and powders.

Use liquids rather than dust—won't spread so.

Try to find other ways to eliminate pests.

Correct pesticides by spraying and dusting.

Mr. Reuss. Thank you, Mr. Kimball. Dr. Spangler, in your testimony you referred to the fact that enforcement of antipollution legislation already on the books will serve as desirable stimuli for private enterprise to accelerate research and development to improve the cost effectiveness of pollution abatement technology.

Earlier you said the banning of phospates in detergents is needed in controlling water pollution. Now, there is no ban nor, indeed, any Federal legislation whatever, relating to phosphates in detergents.

Am I correct in inferring, therefore, that when you said that enforcement of existing antipollution legislation will take care of some of our problems, you were not there referring to the phosphates-detergent problem, and that additional legislation will be necessary to eliminate, or even to alleviate that problem?

Dr. Spangler. Well, I think legislation is certainly one alternative. Another alternative is to have committees of representatives from industry, Government, and private institutions concerned with pollution to study the problems and agree to ban it themselves. I don't know whether they will take that step, but——

Mr. Reuss. There is such a committee of industry, which has a few governmental representatives on it. It has been in existence for several years, but so far the industry hasn't even agreed that phosphates cause any pollution.

Dr. Spangler. Yes. There is some controversy over that matter, I might say. Dr. Robert Sweeney, who is director of the Great Lakes Regional Laboratory at Buffalo, N.Y., and who was a consultant in the study we performed for the Marine Sciences Council, indicates that scientific knowledge does not conclusively prove that removal of phosphates alone will substantially reduce the rate of algal growth in Lake Erie.

Mr. Reuss. Of course. He is right there, because Lake Erie is putrifying from so many sources that just removing phosphates from detergents could not clean it up.

But I trust that the good doctor does not conclude from that that phosphates in detergents aren't a major cause of the degradation of many, many other lakes around the country.

Dr. Spangler. No, I am sure he is quite aware of the effect. In fact, I reflected my personal concern about it by putting such a statement in my testimony. I really feel that is one of the things you can point to that needs correction.

Now if other measures won't work, I would say that legislation is very definitely needed on that. But I also point to the controversy over companion measures that are needed to perform the job. I think that is what I meant by technology assessment, which is a particularly valuable approach in appraising this.

Unless we reduce controversy over these things, we aren't going to get the taxpayers to release their dollars, nor will Congress or the administration be willing to spend the money, and so forth. These are very important factors.

Mr. Reuss. Another very interesting comment you made is that we need the extension of sewage effluent pipes to a greater distance from shore in the Great Lakes.

Actually, wouldn't this extension of sewage effluent pipes to a greater distance from shore be one rather inexpensive, short-term, mode of protecting municipal water supplies?

Dr. **Spangler.** Indeed, it is. I was very much encouraged in a field trip to Lake Erie to note this activity was already in progress and the major implementing or triggering mechanism there was Federal participation. The geography of the region is very important in understanding this. There is a prevailing westerly wind and the shore of Lake Erie has a northeast-southwest orientation. This tends to keep these effluents along the shallow coastal margin where algae primarily grows.

And the cities along that lake have generally tried to preserve their own immediate environment by putting their effluent pipes on the east side of the city, which means that their neighboring down-current city is the one that is injured by this pollution.

So what is the motivation for the local community to spend money on an improved system, from which it doesn't immediately benefit, but from which its neighbor benefits?

Well, the Federal Government coming in with their Clean Water Act, and also helping with some money, has persuaded people that if they ameliorate their pollution to the lake which benefits their down-current neighbor, their up-current neighbor by the same token will also execute the same kind of program which will benefit them.

So it is a sort of cooperative deal that in my opinion would not really have gotten started without a substantial Federal input of funds.

Mr. **Reuss.** We wouldn't, of course, want to overestimate the benefits from merely extending the pollution-discharging effluent pipe farther out into the lake. But in many cases these pipes are placed in dangerous proximity to the municipal water intake—either your own or the community downwind from you.

Dr. **Spangler.** I think you make a fine point there.

There are other measures needed. We outlined some of these at considerable length in our report to the Marine Sciences Council.

Mr. **Reuss.** Right. Mr. Wright?

Mr. **Wright.** Thank you, Mr. Chairman. I will try not to take too much time here because I notice Mr. Waldie is here and has a statement to make.

I was greatly interested, Mr. Kimball, in your report of the surveys conducted by the Gallup organization and also by the Harris organization. You indicated that a poll had been completed by the Harris organization probing into how much the average American would be willing to spend to clean up his environment. I assume that you are going to introduce into the record the copies of those findings.

Just as a quick reference, what did the Harris poll indicate the average American would be willing to spend?

Mr. **Kimball.** I furnished counsel with a copy of the complete survey.

Mr. **Wright.** Could you give me a sort of thumbnail answer?

Mr. **Kimball.** I can give you one example of dealing with public utilities. We asked the specific question, "How much would you be willing to pay monthly on your utility bill in order to clean up the air pollution, thermal, perhaps radioactive pollution, emanating from electrical generating plants?"

We started out with $2 a month. The great majority of the people were not willing to pay that much. We scaled it on down, and, of course, as we scaled it down, we gathered a higher percentage.

If I recall the figures correctly, when we got down to 25 cents a month, well over 70 percent of the entire population was willing to pay this. And we had estimated that it would cost about 11 cents to do the job. We didn't tell them that in the survey.

Mr. Wright. This has to do solely with thermal pollution?

Mr. Kimball. No, it had to do with all emissions. In other words, air and water.

Mr. Wright. You estimated that 11 cents a month per citizen would do the job?

Mr. Kimball. Well, 11 cents per month on everyone who paid a monthly utility bill.

Mr. Wright. Eleven cents a month on everyone's utility bill?

Mr. Kimball. Yes.

Mr. Wright. I am not sure that would do it, if you have in mind also paying for the Federal share of the water pollution abatement program, the grants-in-aid programs. Was this separate and distinct?

Mr. Kimball. I don't recall whether that was separate. It may have been.

Mr. Wright. You have recommended that we appropriate some $18 billion in the next 5 years for water pollution abatement. This is the grants-in-aid program to assist municipalities in cleaning up their sewage treatment.

Mr. Kimball. There is a correction there. This was the total program—in addition to grants to municipalities—this $26 to $29 billion.

Mr. Wright. I see. You are not talking solely about the grants-in-aid program under the Clean Water Act when you say $18 billion?

Mr. Kimball. It is $26 to $29 billion for the total job of cleaning up the water or getting started on it.

Mr. Wright. You think the Federal share should be $18 billion?

Mr. Kimball. Correct.

Mr. Wright. Let us say $15 billion for a round figure. That is approximately $3 billion a year. Now $3 billion a year, divided by 200 million citizens, would be $15 a year, or $1.25 a month. This is about what it would take. I think at the moment we have an authorization for this particular grant-in-aid program, for the present fiscal year, of $1 billion.

This would be $5 a year which is, of course, a little less than 50 cents a month for the average citizen.

We authorized and appropriated some $800 million in the current fiscal year for this program. The President had requested $214 million. I think we really do need to be somewhat specific about how much it is going to cost. I quite agree with you, as I am sure most people do, about the priority of the problem.

But if we appropriated about $3 billion a year for the whole gamut of programs aimed at preserving, protecting, and restoring the environment, we are talking about $15 a year per citizen.

Mr. Kimball. Of course, these are some of the things that I think the Government itself should address to the Nation. I don't know whether the majority of the general public would want to pay an additional $15 per year to do the job. But we will never know unless somebody finds out.

And this was our small contribution—just to get some indication of it. Now, with all of the research and resources that the Federal

Government has at its disposal, I would think it would begin to find out.

Mr. WRIGHT. I cannot imagine but that most of the public, once aware of the desperation of the conditions, and of the indispensability of clean water, would not be willing to pay $15 a year.

Mr. KIMBALL. Yes. Speaking as one citizen I would certainly be willing to pay that, if I were convinced the money was going to be allocated to the actual job of cleaning up the environment and that that would do the job.

Mr. WRIGHT. I have just one other question, Mr. Chairman, if I may. I appreciate your booklet on the "Index of Environment Quality." I think it is a significant contribution. I hope it gets widespread distribution.

In your section on soil, you have made some analyses of what the Federal Soil Conservation Service has been able to do to slow down the erosion of our land resources. This, of course, also has a direct effect upon the quality of our water resources, because siltation fills up our lakes.

I think it has been estimated that in regard to siltation of our lakes, rivers, and streams, it takes a toll of some $125 million annually simply to dredge the silt.

In addition to that, siltation probably fills up another $125 million worth of water-storage space. So if my figures are somewhere nearly accurate, an identifiable quarter of a billion dollars annually is lost through siltation.

However, we have a far more serious problem, I think, in the question of where to put new lakes, once the present ones are filled up. Most of the best lake sites have been taken.

Notwithstanding this, occasionally I am discouraged and somewhat frustrated when a publication, such as, for example, Field and Stream, publishes an article someone has written castigating the Soil Conservation Service and saying it is harming rather than helping the environment.

You don't hold with that, do you?

Mr. KIMBALL. Well, it is pretty hard to put everything in black-and-white context. There are certainly some gray areas. I would think if you balanced them all out, there is little question but what the Soil Conservation Service has made a great contribution toward eliminating pollution of our waterways from soil erosion. There is no question about that. But in the application of some of its laws, you know when you have that many people working on specific problems, there are bound to be conflicting problems in the application of those laws, and in the uses of water.

Here is where I think the Service needs some castigation. In the view of many conservationists, the straightening of stream channels for flood-control purposes or the building of dams on trout streams for the same purposes—which tends to depreciate fish-wildlife values—have been under attack.

It is the feeling of those of us who have a primary interest in wildlife that perhaps a greater evalution of the damage that is done in these areas is in order at the present moment. This does not, I hope, detract from the overall great contribution of the SCS to the soil conservation problem in America.

Mr. Wright. Thank you very much.

Mr. Reuss. You would have to agree that the Soil Conservation Service is definitely one of the less destructive Federal agencies?

Mr. Kimball. Most certainly. I would agree to that heartily.

Mr. Reuss. Thank you both so much, Mr. Kimball and Dr. Spangler, for your helpful contribution. We will now ask our colleague, Representative Jerome R. Waldie, of California's 14th congressional district, to step forward.

You are very welcome, Jerry. You have been of great assistance to this subcommittee in its studies of the San Francisco Bay area. We are honored to have you here this morning.

Mr. Wright. Mr. Chairman, may I add that Mr. Waldie, during service on the Public Works Committee of the House, made significant contributions to many monumental pieces of legislation, including the Highway Beautification Act, the Water Quality Act, and others.

He is unquestionably a dedicated champion of conservation and environmental quality. He has made his mark felt on a lot of these things.

STATEMENT OF HON. JEROME R. WALDIE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. Waldie. I appreciate that, Mr. Chairman.

Before I go into my remarks, I would like to comment briefly on the proper consideration that the committee evinced in their questioning of the prior witnesses as to cost.

It occurred to me that we are overlooking the willingness of this country to commit vast portions of its resources to causes in which it deeply believes. We have been spending at the very least $24 billion a year to restore the quality of life and the environment of South Vietnam for a number of years. And apparently the Nation has been quite willing to expend that kind of money for that cause.

It seems to me the leadership that was able to adduce that sort of support for those sorts of expenditures would be able to induce a considerably lesser expenditure for a more or at least equally valuable result in America in cleaning up this particular country and this particular atmosphere and this particular environment.

I would not then approach the problem of cost with the hesitancy that I suspect a number of political people might approach it. Politicians are magnificent in their wondrous results, and Vietnam seems to me to be the most beautiful example of a political leadership being able to convince a people to expend that kind of money for those minimal results.

If we could do it there, we could do it in this cause, which has far more to commend it in my perhaps minority view, but we ought to approach it at least with equal conviction.

Mr. Chairman, and members of the committee: I would like to commence by reading to you a sentence or two from an article published in the San Francisco, Calif., Chronicle on December 21, 1969. It was written by Harold Gilliam, who is a reporter of considerable repute for that newspaper in the area of conservation. And I think it summarizes the problem with which we in the Congress are confronted.

He said:

> Ecology has become a political phenomenon, and bids fair to take over the country. Men in public life feel it is as obligatory to talk about the environment as they once habitually inserted the name of God at the end of every major speech.
>
> Too often both words are taken in vain by speakers as unversed in ecology as theology. A century of increasingly devastating assaults on the environment cannot be expunged with pious pronouncements and noble resolutions.
>
> The battered biosphere is approaching the point of no repair. The habitable earth can be preserved only by a drastic reversal of direction. Our technology, our economy, as well as habits and attitudes deeply embedded in our culture, are based on the conquest of nature.
>
> This article of the American creed is ultimately suicidal. In the long run nature always wins. To survive we are going to have to stop trying to beat nature into submission and work out an accommodation. We are going to have to stop doing innumerable things that are profitable or convenient; if we want a habitable earth we are going to have to pay a very high price.

With those words of Mr. Gilliam as the reference point, I would like to comment on two basic signals that I think have been given to America, that in fact we are not going to win our battles with nature if we continue to follow the rhetoric of American society that we must conquer nature.

I think the country has been given two major examples of what occurs when we enter into that sort of battle with nature which we are going to lose and which we properly should lose. The first one is Lake Erie—with which this committee is far more familiar than I.

Ecologist Barry Commoner suggests, with regard to Lake Erie, and I think correctly, that the process of eutrophication of that body of water may be irreversible, and that we may have lost that resource.

There probably is no greater indication to this country that if a massive resource that seemed inexhaustible just a few years ago can in fact be lost, man can destroy through water pollution every single water resource that exists in America. If Lake Erie can be destroyed by man, then there is nothing in America that we can't destroy in terms of water pollution.

I think the second signal that America has been given, and hopefully will pay attention to, is a similar massive destruction of another resource, and that is air. The Los Angeles Basin in my home State literally has insufficient air to support the people that live in that basin. Those people are literally—and I do not exaggerate—gasping for air. There are days in the Los Angeles Basin when the demands on that air supply are so tremendous that the people living in that basin are instructed by governmental action not to engage in any undue physical effort because by so doing they will find the air supply necessary to sustain that sort of activity insufficient.

Over 1,300,000 trees—not in the basin, but on the edge of the basin—in the San Bernardino Forest are now afflicted by air pollution coming from that basin. From the extreme of being killed to the minimal category of being adversely affected, sickened, by the air that they are required to breath from that basin.

Now, those two signals indicate that if you can destroy the air supply of an area as large as the Los Angeles Basin, you can destroy the air supply of the entire United States. If you can destroy the water resources that are represented by Lake Erie, you can destroy any water resource in the United States.

Now, everybody is aware of those two instances of destruction of the environment by man. And everybody deplores it.

In California, unhappily, the rhetoric of deploring, and the rhetoric of concern are not being matched by the performance of either the State administration or of the Federal Government.

There is involved in California a perfect example of laxity on the part of every governmental entity involved in natural resources planning. And in California it involves the Federal and State governments, the pollution of water and the pollution of air, as well as the destruction of the quality of life in general.

It is an example, as Califoria often is, that has equal application throughout the country, and I think bears study by the Congress.

California, knowing that the air supply in the Los Angeles Basin is insufficient to support the existing population, is proposing to take steps, buttressed by the Federal Government, to enable the population in that basin to continue to grow; and to grow far beyond what the resources in that area can support.

This area is not only short of air, it is short of water. So, the proposal of the California authorities developed in the 1950's—when the word ecology not only was rarely understood, but people couldn't spell it—the proposal of the California authorities, supported by the Federal Government, is to import water from the north, where it is not in quantity supplies over and above the requirements of that area, to export that water to the Los Angeles Basin to enable that basin to continue to grow.

The Metropolitan Water District, which is the primary customer for this water, boasts in a pamphlet they have recently published, entitled "Water from the North," as follows:

> Within 25 years the population of the Metropolitan Water District of Southern California, now more than 10 million, or half that the entire State, is expected to be 17 million.

Then the district describes this biggest aqueduct project of all time. I only discuss it before this committee because I think that is a proper description of it. This is the biggest aqueduct project of all time. They say:

> Water will be brought 450 miles to Southern California from the Delta of the Sacramento and San Joaquin Rivers in the north.

They say further:

> For the past quarter century, MWD has been supplementing the water supply of Southern California with water from the Colorado River aqueduct, which currently brings more than a billion gallons a day into the arid coastal plain.

And I emphasize "arid coastal plain." The pamphlet continues: "This water from the Colorado has made possible Southern California's fantastic growth since the end of World War II."

I can't think of a better example of the Chamber of Commerce Syndrome that suggests fantastic growth is the best of all possible worlds for the area that is growing. I can't think of a better example where an area whose resources in their natural stage are insufficient to support life is developed by importing water from the Colorado first, and now water from the north, to develop that arid coastal plain.

So, the anticipated 17 million population is expected because the Metropolitan Water District is going to provide the water to this arid land that cannot support it. They are in a controversy—a combat with nature—that they are not going to win.

Nature provided an arid coastal plain in the Los Angeles Basin and supplied an air supply for the Los Angeles Basin that would support life in an arid coastal plain.

They are changing that arid coastal plain into a fantastic complex, not to improve the quality of life, but in my view to accomplish the interest that is represented by this sort of an advertisement in the Los Angeles Times of Wednesday, December 31, 1969: "What Makes Land Go Boom: (Industry, Freeways and People)". The text of the ad:

> Industry, freeways, and people have created land booms and made people rich. They have prospered through small land developments reaching from the San Francisco Bay Area down through San Fernando Valley to Orange County and San Diego.
>
> Now, California's last and biggest land boom is shaping up. Where? In Los Angeles County's Antelope Valley—

That is the Los Angeles Basin—

> where land for the world's largest airport is being acquired now, the first intercontinental airport designed to serve 150 million passengers a year.

Isn't that wonderful? The document goes on to say:

> It is where Lockheed will assemble its giant new L–1011 Tri-Star Jet Transport with 5,000 new workers next year. It is where over 60 major corporations have located more plants for production research and service to the world's first aero-metropolis.
>
> All in Antelope Valley. What are the basic factors creating Antelope Valley's land boom? Experts in land development agree on four factors that create a genuine land boom anywhere.
>
> One, availability of level buildable land—

In the Metropolitan Water District's language—

> arid coastal plains. Two, ample water supply.

In the Metropolitan Water District's brochure, arid coastal plains fed by the Colorado River and northern California water.

> Three, land located directly and immediately in the path of population growth.
>
> Four, built-in value boosters like quickly expanding industry and commerce, widespread new home construction, access by super freeway and abundant utility of service.
>
> Antelope Valley satisfies all four needs for a boom. This is the last land available for major development in Los Angeles County. The population in the Antelope Valley is expected to climb from 150,000 now to over 1 million in 10 years.
>
> Anticipating this growth, the last links of a new high-speed freeway are being completed, bringing the Antelope Valley within minutes of all major population centers of Los Angeles County. What do you suppose all this will mean to those who buy land while prices are still reasonable?
>
> Antelope Valley industry is expanding at a phenomenal rate. According to published estimates, the new Intercontinental Airport alone will create 300,000 new jobs and bring 500,000 new families to the area.

Then they boast in big type:

> This is not recreational land, this is investment land. These are not small lots. This is acreage. New communities will rise.

And it goes on and on. That I think, Mr. Chairman, is the problem that we are up against in attempting to suggest that any efforts to protect environment, to restore sanity or stability to the balance—the delicate balance of resources in a particular area—is going to run against in the American society.

Mr. Reuss. If I might interrupt you, what would you do about the problem of Los Angeles where, as you describe it, people are about to strangle for lack of air and thirst for lack of water? You already said you would not alter the ecology by importing water from great distances.

But that alone is not going to keep new people from moving into the Los Angeles area, because each new person who moves in, being human, tends to think, "Well, there will be enough water for me and my family."

Mr. Waldie. Economics would prevent those decisions from being made, Mr. Chairman. The desert in California has a very low density population. Few people live in the great desert in California because there is no water. People don't move there at this time because they know there is no water. If water is not transported there in the quantities that they are seeking for land speculation, existing land prices will not rise. Subdivisions on arid lands that can't support population will no longer be developed.

Mr. Reuss. Where there is now a single family area, could there not be high-rise apartments—which will mean a given area of land already served by water would support, so it would seem, 20 times the people who used to live there?

Mr. Waldie. Perhaps, except that people are moving out of the Los Angeles area. The latest medical figures quoted in news reports show that roughly 10,000 persons a year are required by their doctors to move out because of lung problems and the inability of the Los Angeles Basin's air supply to sustain them.

Also, Los Angeles County recently brought a lawsuit against the automobile manufacturers and alleged in their complaint that part of the problem that the county was experiencing from the automobile manufacturers' unwillingness to control emissions was the increased welfare costs caused by the deterioration of health of welfare recipients breathing this air.

In my opinion, there is a built-in governor on the ability of the Los Angeles area to sustain much more life. Perhaps those that are now there will start moving out; perhaps those who are now there will have an opportunity to clean up that which is there.

I think this Los Angeles matter is a good example, though, of the type of thing with which the Federal Government is confronted, where they are depleting the resources of one area, and I have not even gone into the depletion of the north to which this transfer of massive resources of water to the south will contribute.

But in microcosm, I think, this water transfer scheme is an example of economists desiring to get water to an area to profit from it, and engineers whose sole mission is to design the cheapest method and most efficient method of conveying that resource from one area to another. I do not deplore their attitudes, their attitudes are proper for the interests they represent. Neither of these interests, however, had overseeing them and making decisions those who have interests other than engineering construction or the economic responsibility of transmitting resources from one end of an area to another for profit.

There ought to be machinery, and this machinery ought to be in the Federal Government, where somebody is overseeing massive resources exchanges as to all of the consequences of those exchanges—not just as to the immediate consequence for which the exchange was planned.

No one in the 1950's even assumed that the air supply would be exhausted in Los Angeles; no one in the 1950's assumed that the water supply in the North would be jeopardized. In fact, anyone who examined that plan could have predicted it, were they looking for that possibility. They were not looking for that possibility, because everyone examining the plan was seeking to justify it on an economic or engineering level.

I think that is the role that the Federal Government perhaps could best play—that they provide that sort of independent examination.

Mr. Wright. May I ask you a question?

Mr. Waldie. Surely.

Mr. Wright. I have seen some population statistics which indicate that if the present trend continues—abetted by these various schemes to bring water and other resources into areas which lend themselves to dramatic growth—that by the year 2000 it is anticipated some 76 percent of the total U.S. population would reside in four huge megalopoles along the eastern seaboard, the west coast, the Great Lakes and the gulf, leaving only 24 percent of the people living in the entire remainder of the United States. Obviously, this is somewhat frightening in that it makes possible the total destruction of the great resources such as Lake Erie and the Los Angeles valley.

President Nixon in his state of the Union message made reference to the development of what he termed "a national growth policy."

Implicit in his remarks, if I understand them correctly, is some sort of a notion that we must come to adopting a policy of dispersal of population rather than its concentration.

I think he is tentatively trying to test the waters to see whether he dare say that we must begin to reverse—not only to slow down, but to reverse—this population concentration trend.

You live in the metropolitan area. Would you support the kind of national program that would aim by tax incentives perhaps, and otherwise, to encourage those industries capable of providing employment to disperse to other areas where the natural ecology can support them, and thus to attract people to those areas rather than continuing to build enormous megalopoles?

Mr. Waldie. I would support such a plan if your assumption is correct that the industry could move to where the natural ecology could support it. It has been my experience, certainly in the area in which I live, that the natural ecology has been the factor that brought the industry into the area. Rivers to transport——

Mr. Wright. Naturally as to harbors. Industries came because harbors made commerce possible.

Mr. Waldie. Yes. I think dispersal of population is an essential part of the efforts to control what is happening to America. But I think there is probably a far more basic need that we really have not addressed ourselves to, and I perhaps am not sufficiently courageous to address myself to, and that is population control and the role of government in this issue.

No matter how much we spend, no matter how much we do, we are not even able to keep up with the erosions on these problems occasioned by too many people. And every problem you have discussed, that I have discussed, and that you will hear about is simply a reflection of too many people. These problems did not exist until we had too many people.

Until someone really addresses himself or herself with the courage and the power that the problem requires, I think we are probably going to still be using the Band-Aid approach to protecting the world.

I stand here very honestly before you, though, and tell you that I have not personally the courage to address myself to that problem with the force that I believe it requires.

Mr. **Wright**. Thank you very much. You have provided a very forthright statement.

Mr. **Reuss**. Before you leave: I am not quite satisfied that increased costs alone are going to keep the population from overwhelming a geographical area such as Los Angeles, which you have described. Yet I have to say that I don't have any very ready suggestions.

In a democracy you could hardly keep people out of an area physically. You can, of course, put limits on population by having a great green belt or open space around an area which is at its ecologically overwhelming point. You can also, by simply not allowing high-rise apartments, restrict the total habitation within that area.

Our experience with slums shows that sometimes legal requirements as to how many people can live in a given area get grossly violated.

Would you say that the type of planning I have described is an important element of keeping our population in areas where it will not overwhelm the environment?

Mr. **Waldie**. Mr. Chairman, I think it is not only an important element; I think it is essential and the key. The only thing I suggest in terms of bringing about the attitude that is commensurate with good, tough planning is that we not do anything consciously to ease the necessity of those who have to make those hard decisions.

In other words, if the Los Angeles Basin finds itself in a position—because it has finally run out of air and run out of water—that the siren calling for people to emigrate to Los Angeles no longer is going to be issued by the Chambers of Commerce in those respective areas, then Southern California officials are going to have to deal with the population that is there and the natural increase of that population subject to the restrictions of present water and air supplies. And those restrictions, I think, are going to compel the hard decisions that you suggest must be made with proper planning. Unless there is some compulsion, those decisions will not be made.

If you can continue to expand your desert lands into subdivisions, and make money by so doing, local governments are not going to respond to the problem with the sense of urgency you suggest they should.

Mr. **Reuss**. And finally, if Los Angeles were given a crutch in the form of clean air and clean water from outside, that would be one thing; but where are you going to put the people who are not going to be able to come to Los Angeles if that crutch is not given?

Mr. **Waldie**. Well, I suppose a good number of those people will stay home where they are now living. As a matter of fact, if I were living in the Midwest and contemplated the glories of Los Angeles, I would look at how often they have smog alert days there and I would find the Midwest a more healthy place to raise my family than I find the Los Angeles basin.

Mr. Reuss. What if you lived in Chicago, which is the second most polluted city in the United States?

Mr. Waldie. I would not move from Chicago to Los Angeles and consider that a major advantage, although it might be. As a Californian, I find it difficult to assume that Chicago is a better place to live than anywhere in California. But if I were a Chicagoan and seeking to move elsewhere, and found I could not afford to live in Los Angeles, or found it undesirable, I would make all of the numerous human choices that are open to people.

I just suggest that we not encourage people, when they are making those choices, to go into those areas that are already saturated. I do not know of many people who select Chicago as their choice when they are uprooting their home today. And that is good for Chicago. I think it is probably an asset to Chicago that it is not being selected as a primary target for emigration. I suspect that is so. I would hope it is so.

When Los Angeles can say that people no longer select Los Angeles as the target for their emigration, I think that would be good for Los Angeles.

Mr. Reuss. Thank you very much, Jerry, for your helpful testimony.

Mr. Waldie. Let me simply add: I would not urge any of them to come to Contra Costa County either.

Mr. Reuss. Thank you, Congressman Waldie.

(Note.—The following newspaper articles were submitted by Congressman Waldie for inclusion in the hearing record:)

[From the Oakland Tribune, Jan. 4, 1970]

Is State's Population Boom a Curse?

(By Dennis J. Opatrny)

Sacramento.—Population experts predict California will widen its lead as the Nation's most populous State during the 1970's.

But Californians remain divided over whether the population boom is a blessing or a curse.

As the new decade dawns, one out of every 10 Americans lives in California. The State's population has reached 20 million and is expected to balloon to 26 million in the next 10 years.

When the glitter of the Golden State will begin to tarnish is uncertain. But there are those who will guess.

"California will stop growing one day because it will have become just as repulsive as the rest of the country," says geographer Daniel B. Luten.

"It's a truism. It's inescapable," adds Luten, who lectures at the University of California at Berkeley.

Ecologist Kenneth E. F. Watt believes the population expansion must subside soon or Californians will face "most serious implications" concerning their food supply.

"If the rate of people to agricultural land continues to rise at the current rapid rate, then a time will come when the State is no longer capable of providing sufficient food products for consumption by Californians, not to mention exportable surpluses," says Watt, who teaches at the university's Davis campus.

Both statements reflect the increased awareness of many residents about the burgeoning population, which public officials crowed about when California surpassed New York in 1962 as the most populous State.

In the 1960's the State income tax jumped markedly, the number of cars nearly doubled, the miles of concrete freeways more than tripled while drivers killed themselves and others at a faster clip than ever before.

Each man, woman, and child paid an average of $17.14 in State income taxes for the year 1960, when there were 15.7 million Californians from whom the State Franchise Tax Board collected $269.1 million.

The income tax bill paid by California's 20 million residents in 1963 was $950 million, or a hike to $42.50 each for the typical man, woman, and child.

Californians have long prided themselves on being first in a number of endeavors, although some of the honors appear dubious.

The State registered 8.6 million motor vehicles in 1960. There are now more than 13 million registered automobiles and trucks using the State's enlarged highway network.

California's phenomenal steady doubling every 20 years will continue but the rate will slacken slightly.

The State's Department of Finance's population research unit projects there will be 26 million Californians by 1980, 32 million by 1990, and nearly 39 million by the beginning of the 21st century.

W. Nelson Rasmussen, a demographer for the research unit, says the peak immigration period this past decade probably came in 1962–63, when an estimated 360,000 persons annually flooded into California from other States.

He says about one-third of the newcomers during those peak years set up housekeeping in the Los Angeles area.

No one knows for sure, though, where they all came from, since there has been no official census in nearly 10 years. In the previous decade Illinois led all other States in net immigration to California.

Foreign immigration amounts to between 50,000 and 70,000 annually, Rasmussen estimates. Demographers assume military population remains about stable, even though there is much transferring in and out of the State by Armed Forces personnel.

Mrs. Isabel Hambright, who also works as a demographer in the population research unit, agrees that someday the State may lose its allure, but adds it's up to Californians to do something about it.

"We're not saying its becoming less attractive," she says, "but problems do go with it as you grow."

Mrs. Hambright points to Japan as an example for Californians to compare their State to and decide a level of tolerance for population squeeze and environmental problems.

Japan is about the same physical size as California with similar geography. California has 20 million residents while Japan has 100 million inhabitants.

"It would take a drastic change in the life of Californians to live like the Japanese," she observes in obvious understatement.

Geographer Luten says "growing forces" within California are emerging which recognize that unbridled growth in the future would not be to the State's advantage.

"People are beginning to worry about population," he says, indicating that birth control may play a key role in restricting California's population increase once immigration becomes static.

Asked when a population saturation level will be reached to make it uncomfortable for Californians to live here, Luten grinned and replied: "Oh, about 10 million."

[From the Los Angeles Times]

INCREASED SMOG THREAT TO PREP SPORTS ACTIVITIES

(By Earl Gustkey)

"Attention, all students! The current ozone reading is 0.37. Today's track meet is postponed."

A prank? No. It's an announcement that students in almost 50 Southern California schools may soon be hearing frequently. Athletic events will be smogged out as well as rained out because doctors are becoming increasing worried about the effects of polluted air on athletes.

A year ago, the Los Angeles County Medical Association unanimously passed a resolution stating, in part:

"Smog is an increasing health hazard which may seriously affect the lungs of young people, and the committee on environmental health of the LACMA strongly recommends that when the forecast concentration of ozone (oxidents) in the atmosphere reaches 0.35 parts per million, students should be excused from strenuous indoor and outdoor activities."

SERIOUS HAZARD

Alarmed, Ken Fagans, commissioner of the 441-school California Interscholastic Federation, appointed Ken Bullock, San Marino High School principal, to head a committee to investigate the problem.

Bullock's committee met first with the Los Angeles Air Pollution Control District and then with the county's environmental health committee.

"We came away from those meetings feeling that we should consider smog as a very serious hazard to not just our athletes but to all our students," said Bullock.

The LACMA warning, he said, also referred to physical education classes.

Athletes and students in physical education classes have complained for years about smog-produced burning throats and labored breathing. But until the medical association warning there was no widespread distress among school officials.

Now, Fagans says he will advise all CIF schools "to be prepared next year to cope with athletic postponements due to smog."

Postponements due to smog are not new in the CIF, according to the commissioner. Some events have been called off by local school authorities. But now, he says, "we have a method of knowing just when athletics or physical education should not be conducted."

The method is a Hoagan-Smit-Bradley ozone detection device, an inexpensive ($2 per test) means of measuring smog. According to Robert Barsky, deputy air pollution control officer of the APCD, any high school chemistry teacher can operate the system.

The device consists of special compounded rubber strips which are sensitized to ozone and packaged in airtight containers. A strip is exposed to the air, observed through a jeweler's eyepiece and timed with a stopwatch. The time it takes for the ozone in the air to make the rubber start cracking indicates the ozone concentration. The actual figure is calculated by using a chart.

Bullock's committee will soon recommend that all CIF schools obtain the device.

Smog-belt schools like San Marino, Arcadia, and San Gabriel are particularly concerned about the problem, says Fagans. All Rio Hondo League B football games last season were switched from daytime kickoffs to 5:45 p.m. to take advantage of lower nighttime ozone readings. Class C games were moved from 3 to 4 p.m.

Dr. Clark Lauder, a team physician for Arcadia High, says he was happy to see the CIF display alarm.

"With a heavy ozone count, you don't get proper amounts of oxygen and you can't oxygenate your muscles properly when engaged in exercise, and the harder you breathe the more pollutants you're inhaling—that has to be causing some kind of damage," said Dr. Lauder.

An attempt was made in the early 1960's to determine if smog actually reduced an athlete's performance. The investigation, supported by the U.S. Public Health Service, concentrated on cross-country and track runners at San Marino High from 1959 to 1964.

The findings, published in the Journal of the American Medical Association in 1967, weren't conclusive, but did suggest that smog hampers long distance running performance.

OXIDANT LEVEL

"The four meets in which the average team time did not improve were the four worst days of the series for air pollution as measured by oxidant level in the hour before the race," the report said.

The report also stated, "The percent of team members who failed to improve their performance is highly correlated to the level of oxidant in the air."

Dr. Hurley Motley, who helped write LACMA's warning a year ago, admits that doctors are worried about the cumulative effects of smog on athletes and physical education students.

"An athlete, depending on what activity he's participating in, can breathe up to five times harder than normal and that means he's inhaling five times as many irritants. We just aren't sure what long-range effects this might have on our young people, but it's not doing their lungs any good."

Indoor sports like basketball will also be subject to postponement because the medical association said it believes there isn't much difference between indoor and outdoor ozone density.

QUICK COMMUNICATION

The 18 Los Angeles city schools are prepared to eliminate vigorous activities from their PE programs on short notice and to postpone athletic events. So far, however, the only two smog-alert days since July were nonschool days.

The L.A. schools are connected with the APCD via a radio network and can be notified of a smog alert within minutes.

Apparently, no other metropolitan area has L.A.'s problem. San Francisco and San Diego sections of the CIF reported they were not concerned over air pollution in connection with high school athletic and PE programs.

[From the Christian Science Monitor, Nov. 22, 1969]

CONFEREES HEAR SPENDING PLEA—BIOLOGIST WARNS CALIFORNIA TO POLICE ITS ENVIRONMENT

(By Kimmis Hendrick)

An expert in environmental sciences has challenged California to take immediate drastic, even expensive steps to clean up its air, restore balance to its land use, and stop the pollution of its water resources.

It's not too late—but almost, declares Dr. Barry Commoner, director of the Center for the Biology of Natural Systems, Washington University, and author of "Science and Survival."

"Why wait for Detroit to rescue you?" Dr. Commoner asked the California leaders attending Gov. Ronald Reagan's 2-day conference on California's changing environment.

"You have the resources; you need to use them," charged Dr. Commoner, expressing an opinion heard throughout conference sessions that pollution was getting a lot of lipservice—as it has in the past—with little action likely.

(Even so, Governor Reagan opened the conference by pledging his administration to vigorous antipollution and strong save-the-environment programs, citing considerable efforts already in progress.)

INJUNCTION SOUGHT BY ACLU

Concurrently, the American Civil Liberties Union (ACLU) of Southern California was applying to the Supreme Court of the United States for an injunction to stop the U.S. Army Corps of Engineers from allowing three big oil companies to start new drilling in the Santa Barbara Channel.

This was the newest attempt by the ACLU to find out whether Americans can get help from the courts for protecting the natural environment from industrial destruction.

At the opening conference session, Secretary of the Interior Walter J. Hickel stressed to newsmen his department's determination to allow no further new drilling in the Santa Barbara Channel.

The very next day, ACLU attorney Al Wirin was pointing out to reporters that the Army Engineers—on their own authority—have granted drilling permission. Marvin Levine, Santa Barbara County deputy county counsel, commented that the Santa Barbara offshore oil problem has been tossed back and forth for months now "like a football" between the Army Engineers and the Interior Department.

Dr. Commoner put the environmental problem facing this State as far more fundamental than solving the Santa Barbara oil difficulty, bad as that is. He defined it in terms of the fact that both the Nation and the State, both superbly equipped with know-how to solve it, have just cut research funds to the bone. Dr. Commoner's word for this was "tragedy."

If the tone of the conference was that California's environment can be saved by laws—and Governor Reagan appeared to be looking for support for a tougher legislative attack on the whole pollution front—Dr. Commoner's contribution was to favor spending more money.

He pointed out that California, thanks to agricultural and urban technology, has become "one of the richest places on the surface of the earth." But as an example of the cost incurred by a resulting natural imbalance, he cited the recently released Kaiser Engineers' report on the San Francisco Bay-Delta water quality control program.

It proposes a system for controlling the bad effects of present agricultural practices on that water system, which over a 50-year period, would cost about $5 billion.

TECHNICAL HOPE OUTLINED

Dr. Commoner described California's ecological situation in words like "grim" and "alarming." But he said the State probably has a generation—not much time, but enough if it acts quickly—to undo most of the damage.

Mr. Reuss. The subcommittee will now stand in recess until 10 o'clock tomorrow morning, in this room, when we will hear from the American Forestry Association, the American Institute of Architects, the American Public Health Association, and the National Parks Association.

(Whereupon, at 11:45 a.m., the subcommittee was recessed, to reconvene at 10 a.m., Tuesday, February 3, 1969.)

THE ENVIRONMENTAL DECADE

(Action Proposals for the 1970's)

TUESDAY, FEBRUARY 3, 1970

House of Representatives,
Conservation and Natural Resources Subcommittee
of the Committee on Government Operations,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 2154, Rayburn House Office Building, Hon. Henry S. Reuss (chairman of the subcommittee) presiding.

Present: Representatives Henry S. Reuss, Jim Wright, Guy Vander Jagt, and Gilbert Gude.

Staff members present: Phineas Indritz, chief counsel, Josephine Scheiber, research analyst; and J. P. Carlson, minority counsel, Committee on Government Operations.

Mr. Reuss. Good morning.

The House Conservation Subcommittee will be in order for a continuation of its series of hearings on "The Environmental Decade (Action Proposals for the 1970's)."

This morning we have at the witness table a blue ribbon panel consisting of Dr. P. Walton Purdom, president-elect of the American Public Health Association; Mr. Anthony Wayne Smith, president and general counsel of the National Parks Association; and Mr. Kenneth B. Pomeroy, chief forester of the American Forestry Association.

From the American Institute of Architects, Mr. Rex Whitaker Allen of San Francisco, president; accompanied by Mr. Donald Williams, chairman of the committee on regional development and natural resources of the AIA, and further accompanied by Mr. James A. Veltman of Philadelphia.

You are all most welcome, gentlemen. You have given us very comprehensive statements which under the rule will be admitted in full into the record. I will now ask each of you to proceed in his own way. Either give that statement or summarize it or go beyond it and at the conclusion of your testimony, I and other members of the subcommittee who are expected momentarily will have some questions to ask.

Dr. Purdom, would you proceed first?

STATEMENT OF DR. P. W. PURDOM, PRESIDENT-ELECT, AMERICAN PUBLIC HEALTH ASSOCIATION

Dr. Purdom. Mr. Chairman, my name is Paul Walton Purdom.

I am a professional engineer and a diplomate of the American Academy of Environmental Engineers, having formerly served as chairman of the board of trustees.

I am the director of the Center for the Study of the Environment and professor of environmental engineering at the Drexel Institute of Technology in Philadelphia. Today, I am here as the president-elect of the American Public Health Association, speaking on behalf of 25,000 members and its affiliated associations.

We are an organization of primarily professional persons engaged in all sorts of activities aimed at enhancing and protecting the health of man. Our concept of health is broad and inclusive, a concern for the whole man, embracing all aspects of physical and mental health and well-being.

Our members consider the present mismanagement of the environment to be one of the most serious threats to man's health and well-being in this decade. Never before in history has man had the capacity to modify his environment as today.

What we need is the wisdom and determination to establish and enforce the priorities to construct an environment that will enhance man's efficiency and the quality of life.

Many of our current environmental problems stem from the growth and concentration of our population, urbanization, industrialization, the rapid development of technology, and man's increasing needs related to his rising standard of living. In fact, man, himself, is one of our major environmental problems—both his increasing numbers and his activities and waste products.

According to the Committee on Resources and Man of the National Academy of Science—National Research Council (1969), the population of the world is doubling at a current rate of about every 35 years. This means that, by the year 2000, urban facilities equivalent to those already in existence will be required for the developed world and even more for undeveloped portions. Projections for the United States for the year 2000 suggest a population of over 300 million.

The implications for environmental quality are staggering. The fragmented approaches and incremental improvements in efficiencies employed today are utterly incapable of handling the sheer magnitude of the problems of future years. Environmental quality must be viewed from the standpoint of the total biosphere and its many complex interrelationships as they relate to the public's interest. These points are illustrated by two examples:

1. HOUSING AND THE RESIDENTIAL ENVIRONMENT

The quality of housing and the residential environment is one of of the most critical human problems of our country, affecting physical and mental health and social well-being. Many homes of urban and rural poor are lacking in the simple fundamental physical requirements, but we have not begun to scientifically determine the criteria to maximize the mental health of the persons living in the densely populated cities.

For the projected population densities, new approaches to urban design for people to meet the physical, mental and social needs for human development are required. Decisions concerning land use, transportation, spatial arrangements, density of pollution sources, et cetera, must all consider the impact on environmental quality if our youth are to have a place to develop their mental and physical capabilities.

From limited studies and intuitive reasoning, we recognize noise, overcrowding, lack of privacy when needed, and other factors, as contributing to the stress of urban life. Monotonous and depressing vistas and lack of recreational facilities fail to provide a stimulus for mental and physical development.

There are many Federal activities regarding housing which, if redirected, could have a tremendous impact on housing quality. For example, housing quality standards could be incorporated in the welfare programs.

There is also a large, local reservoir of human resources in these cities that has been virtually unused in current efforts to improve environmental quality.

2. WASTE AND POLLUTION

That Lake Erie "died" right before our eyes was distressing, but even more shocking is that we did not seem to be aware of what was going on until the damage was irreversible.

To prevent more "Lake Eries," "Donoras," "New York Thanksgiving weekends" that degrade the environment and kill the people, we urgently need a "crash" national program to curb all types of pollution. The effects of pollutants, not separately and individually, but collectively in total, should be carefully evaluated before being released in the environment.

We are just realizing the folly of trying to use what has been called the "natural assimilative capacity" or the "natural adaptation of man" in disposing of waste products. The cost in human values is unbearable and threatens life as we know it.

The increase and concentration of population, the scale of industrial production, and the standard of living with its "convenience" items have given new dimensions to waste disposal. The magnitude overloads the natural systems. The changes are too rapid and too great for evolutionary adaption. We forget that the law of conservation of matter suggests that a waste once generated will persist in the environment. Too often, present pollution control results in the conversion of a waste problem from one form to another—air to water, water to land, or land to air, and so on.

Our present incremental and fragmented approach will leave us with an overburdened environment. A new concept of zero pollutant discharge is required. We have already seen instances where increasing efficiencies of treatment from 50 percent to 85, to 95, to 99, to 99.5 still results in environmental degradation because of the magnitude and effect of the remaining pollution.

Federal incentives and research should be aimed first at developing systems and processes with no pollution. Next priority should be given to recovery, recycling and reuse of liquid, gaseous, and solid products, now considered wastes, but which are really resources in the wrong place and in an undesirable form.

Finally, if a waste is unavoidable it should be biodegradable or acceptable in the environment without harm to the ecology.

There are many other environmental and health relationships which could be enumerated. I have not mentioned food and hunger, the quality of public water supplies, the hazards of occupations, ionizing radiation, the control of the insect carriers of disease, and a host of other concerns. That they were not discussed in detail should not be taken to devalue their importance.

Rather than develop such a list, I would like to consider some means of assuring a healthy environment for man. The American Public Health Association suggests the following are important:

(1) Emphasis should be placed on "action now," to apply existing knowledge and technology to produce a safe, healthy, and desirable quality of environment. The development of abundant and cheaper sources of energy will be important to recycling and reuse.

(2) Educational and retraining programs for teachers in elementary and secondary schools concerning environmental problems should be instituted so the public as a whole will be informed on environmental matters. Vocational and inservice training of the operators of pollution control systems should be expanded. There will be an increasing need for the education of engineers and scientists to solve problems, research and design new systems.

(3) The public needs to be involved in decisions concerning the environment. One mechanism already exists but is currently underutilized for environmental problem solving. This is the Office of Comprehensive Health Planning which must be moved to the Office of the Secretary of Health, Education, and Welfare, or the Under Secretary, if the environment is ever to receive equal attention.

(4) Research will continue to be urgently needed to better understand the man-environment interactions, to formulate solutions to problems, and to find more effective systems for large numbers of people to live in close proximity without the impairment of health and the destruction of human values.

(5) Finally, one must realize that the administrative setting will determine if man's health will receive paramount consideration in the implementation of the laws of Congress and the administration of programs. The American Public Health Association believes this will be best accomplished by creating a new Federal Department of Health with responsibility for both personal and environmental health. Even now, a strengthened and more vigorous Environmental Health Service could be created within the Department of Health, Education, and Welfare. Our concern is that, whatever the setting, man's health receive primary attention.

The scope of present thinking would mean that the total ecology would have to be considered in order to preserve and protect man. As the National Research Council suggests, we should realize that man is the most powerful influence in the environment, its greatest hazard, and its most precious resource.

Mr. REUSS. Thank you, Dr. Purdom.

Would you proceed, Mr. Smith? We will ask all the panelists to present their testimony and then start our questions.

STATEMENT OF ANTHONY WAYNE SMITH, PRESIDENT AND GENERAL COUNSEL, NATIONAL PARKS ASSOCIATION

Mr. SMITH. My name is Anthony Wayne Smith. I am president and general counsel to the National Parks Association, 1701 18th Street, NW., Washington, D.C. I appreciate the official invitation of this subcommittee to testify on the matters before it.

I submit separate statements identifying the association and myself more fully.

(NOTE.—The attachments are in the subcommittee files.)

Addressing myself to your question No. 1—I assume that the members of the committee have the questions before them, but I can repeat them if you wish—The President, in my opinion, should—

(1) Make vigorous use of the new Council on Environmental Quality.

(2) Use presidential authority to stop any Federal or Federal-aid programs questioned by the CEQ as potentially injurious to the environment until thorough investigations can be made and public hearings have been held.

When the legislation establishing CEQ was under consideration, we recommended in testimony given on invitation that a stop order authority be included because you have a great many things going on which are going to need very thorough investigation by this Council. And the President probably has authority to stop most of them, but maybe he doesn't. For example, we have a thoroughly atrocious program going on in the Potomac River Basin under the aegis of the Army Engineers.

Until the Council gets a chance to look at that, the President should have authority to stop it. I don't believe he does.

(3) Seek, accept, and utilize greatly enlarged funds for environmental and conservation programs.

This would seem to us to mean whatever legislation is needed to increase the staff. Such legislation has been introduced.

(4) Put the military personnel of the Army Engineers back in military service and transfer the civilian staff to the Federal Water and National Air Pollution Control Administrations.

We wanted to emphasize this: Put the military personnel of the Army Engineers back in military service and transfer the civilian staff to the Water and Air Pollution Control Administrations.

This has been something that conservationists and people in general have been living with for a long time, with the Army Engineers completely out of control, apparently, as far as the President of the United States is concerned.

Recommendations are now before the Public Works Committees for the construction of reservoirs on the Potomac which large numbers of people have been opposing for years. No endorsement, even by the Secretary of the Army, no endorsement by the Bureau of the Budget, when it was last understood that the administration was opposed to them.

This is a serious question of Government operations which it seems to me, Mr. Chairman, is within the purview of the subcommittee. And if this subcommittee could undertake an investigation of this problem of the Army Engineers, there would be literally millions of Americans who would be grateful to you for doing so.

It is an extremely bad governmental structure, in which there is no centralized or integrated planning authority in the executive branch at all.

Question No. 2—The Federal Government generally should—

(1) Halt its big dam building activities and substitute the complete prevention of pollution of all our streams and rivers.

(2) Revise the national transportation policy completely, looking toward the reduction of highway and air transportation and getting back to the rails.

(3) Initiate industrial plant size and location policies, looking toward smaller industrial establishments in smaller and more widely distributed communities.

This is one defense against too heavy urbanization in huge metropolitan areas which are becoming uninhabitable.

(4) Move ahead rapidly with and expand the existing programs for air and water pollution control, and get going with a noise abatement program. (Getting pollution under control means municipalities, industries, pesticides, herbicides, fertilizers, detergents, silt, noise, heat, and radioactivity.)

(5) Establish agencies and procedures for a complete recycling system with respect to solid wastes. Steel scrap should go back to the mills; the same for aluminum. Glass containers should be returned and ground up for new glass. Paper should be reprocessed. Find out what to do about plastics.

You can't burn plastics, because some of them won't burn. This is atmospheric pollution. You can't recycle them as far as I know, so you have a problem.

If private industry cannot do this work, a Government salvage corporation should be created. A little imagination will indicate all sorts of sticks and carrots which can be used. With respect to sewage, methods are available for getting effluents out onto the land and into the woods as fertilizers. Why are they not used?

Experimental work has been done up at Pennsylvania State University, but nobody pays attention to it.

(6) Develop an energy program which will move us rapidly through conventional nuclear to fast-breeder plants, and toward fusion.

It looks as if we are in a real bind on this energy matter. There may be no very satisfactory solution to it. If we can get over to fusion, maybe, but this will present problems too.

(7) For the protection of the national park system, develop coordinated large regional planning for the dispersion of crowds into much wider areas, and the elimination of the private automobile from the parks.

This is a program the National Parks Association and others have pressed upon the previous administration. It seems to get lipservice, but no action.

(8) In forestry, initiate ecological forestry practices on public and private land everywhere, by regulation if necessary.

That is a statement which is so sweeping I can't possibly—it doesn't mean anything in one sentence like that.

(9) The pending so-called timber supply bill should be rejected. It looks toward an improvident overcutting of national forests under the pretext of a homebuilding emergency; the shortages of lumber are fictitious; the emergency is caused by other factors. There is a grave failure of coordination among Federal agencies on this issue, which should become a major concern of this subcommittee.

(NOTE.—The timber supply bill (H.R. 12025) was granted a rule (H. Res. 799), but the rule failed passage by the House of Representatives on February 26, 1970.)

(10) In wildlife, strengthen Federal laws for the protection and restoration of endangered species, and not merely game animals, and including predators.

(11) The wildlife management bill (S. 1232), which has passed the Senate and is pending in the House, grieviously distorts the true and proper relationship of the Federal and State governments in wildlife management.

(NOTE.—S. 1232 passed the Senate on December 8, 1969. It has been referred to the House Committee on Merchant Marine and Fisheries. That Committee has not yet acted on the bill.)

It should be rejected by the House, and if passed, should be vetoed by the President. It gives the States unrestricted managerial control over all wildlife within their boundaries. This means the State game commissions, which are primarily concerned with hunting, and are not competent to protect endangered species, nor to protect nonhunting areas like State and national parks. Federal policies preventing hunting in national parks must be safeguarded; Federal authority to regulate hunting on all Federal public land should be confirmed; the statement of history, policy, and law set forth in the bill is incorrect.

(12) Create machinery for the protection and restoration of endangered species of plants and insects.

(13) Get a grip on the pesticide and herbicide problem; move over from hard to soft pesticides and from there to biological controls, bearing in mind that most insects and weeds (the wild flowers are weeds) should also be preserved.

(14) Develop abundant outdoor recreational facilities, both inside and outside the cities, keeping such facilities simple and natural, because people wish to escape the artificial environment.

(15) Evolve policies and programs for the restoration and protection of the scenic environment everywhere; around the cities, good landscaping; in the country, the naturally beautiful cultivated farmlands and woodlands; in more distant regions, the wilderness of river and mountain.

(16) Foster programs developed in recent years for protecting wild rivers and estuaries, and for a national system of trails for hiking and horseback riding.

(17) Get the private automobile under control; the auto can be a fine servant, but has been a tyrannical master. This means a switch-over to electric cars, a cutback on personal cars in favor of multipassenger coaches, and in favor of rail transportation; and within the cities, underground and overhead parking, and holding suburban traffic at the city limits, with mass transportation downtown.

(18) A basic revision of U.S. budget policy is essential. Revenues being poured into highways, airports, and big dams must be redirected to environmental protection and restoration, as well as to the complete renovation of our central cities.

(19) Long-term financing of public projects has its place but it makes no sense to finance big roads, airports, and dams out of current appropriations and pin the cost of environmental pro-

> grams on future generations. This need is for a reallocation of public money now being spent on bad programs, making it available for good ones.
>
> (20) The principal field in which long-term capital financing might be desirable is in public land acquisition. A national land bank would be desirable, funded by U.S. Government bonds, having purchasing and lending authority to facilitate the acquisition of land by the Federal, State and local governments.

The land would be for recreational, forest, wildlife, wilderness, open space, and scenic protection. Much wider use should be made of covenants running with the land in perpetuity (the so-called scenic easements), whereby land and open space can be protected while owners may continue in farming and woodlot operation. Purchases should also be made of surplus farm lands on a voluntary seller basis, without the use of eminent domain, to assist farmers desiring to retire from farming, reduce crop surpluses, and protect agricultural land against future need.

My biographical notes show that I am a commercial dairyman, and have been such for some 15 or 16 years in Pennsylvania; so that I am speaking in this connection as a farmer, a dairyman, with practical experience.

> (21) We have inadequate information about the probable recommendations of the Public Land Law Review Commission. The important thing at this juncture in American history is to get more land into public ownership, not to give public land away.

These matters would appear to be of concern to this subcommittee.

I wanted to add one other comment on that point on a slightly different matter. Call it point 22:

We have a problem in Government operations of enforcement of Government mandates. This business of the big jetport in Florida: I was cochairman of the Everglades Coalition which had to move in and get that jetport down there stopped.

That jetport had gone ahead because in two administrations the Transportation Act had been violated by the Federal Aviation Administration, and the Associate Solicitor of the Department of the Interior had rendered an opinion to that effect. That is not an outsider's opinion.

So the question arises: What about this? You lay down in legislation a specific mandate that the Federal Aviation Administration is not to give Federal assistance to projects which destroy the parks and recreational facilities and the environment. That is not the language, but that is the effect of it. They do it anyway. They give them $500,000 to get started.

They give them personnel at the airports. They pay their way all along the line. They let the Dade County Port Authority put $14 million into that project. At that point private organizations had to come in and say, "Look, you are violating the law. Stop it." And they did. But there was no criminal penalty attached to that action, and if we had gone into court as we planned to do on that question, we would probably have had serious problems of proof involved and great expense.

We have another example which may be coming up. You have just passed the Endangered Species Conservation Act, which authorizes

$200,000 for an international conference on the question of extending these safeguards on an international basis.

We are now advised that the Department of the Interior does not intend to use that authority, and is negotiating for private discussions here. Now the law is specific. It says "shall." Shall undertake to convene a ministerial conference. Only a ministerial conference can get this thing out on the level of discussion that it needs to have.

The question that I am raising—and it is a question of Government operations—is how do we enforce these mandates?

Question 3: The CEQ will provide greatly improved coordinating machinery. The problem is really not coordination, but the purposes for which coordination would be used.

We attach a lot of mystique to the notion of coordination. Coordination is desirable. Efficient coordination for evil purposes, however, would be evil; an effective formulation of purposes will in itself contribute to good coordination.

Question 4: The cost of a comprehensive environmental program will be very great. The budget should be cut at other places.

Question 5: We could get more public participation if the agencies held more public hearings and were more responsive to testimony produced by the public.

Question 6: The answer is essentially the same. Many conservation organizations will now channel complaints to the CEQ. If that council does not respond effectively, the public will demand something better.

Question 7: To some extent the courts can be used to help protect the environment; but basically the public responsibility must be discharged by the executive branch, prodded and financed by Congress. Access to the courts in terms of standing to sue and consent to be sued could be facilitated by legislation.

Legislation of this kind has been developed in bits and pieces, and the courts themselves have been expanding their doctrines of standing to sue and consent to be sued.

But this could be facilitated greatly by legislation giving interested parties a right to standing in the Federal courts in actions to enforce Federal law, let's say, and to provide other safeguards of the kind that are being brought into court. You are hit always with the technical doctrines of standing to sue and suit against the United States, lack of consent to be sued, and so forth. They are not realistic doctrines and the merits of the cases are usually decided behind the front of these doctrines.

Question 8: Many of the Federal grant programs are good—for example, recreation, soil conservation, and pollution control—but they are only getting started and will need additional powers and much more money.

Now, without reference to questions, the environmental problem is international. The nations should establish a World Council on Environmental Quality by multilateral convention. This would be an agency on the structural level of the Food and Agriculture Organization or the World Health Organization. Perhaps such a development may result from the United Nations Conference on the Environment scheduled for 1972.

If public officials really wish the support of the private conservation organizations in pushing good environmental programs—and here I speak entirely as an individual—they should revise the tax laws to permit organizations financed by contributions to engage in relevant legislative activity. Trade associations, labor organizations, farm organizations, have such freedom; the nonprofit public-service organizations—concerned not with private profit, nor even private property interests, but with the public interest—should be freed to make their distinctive contributions to Congress.

The Government must evolve an effective population program. This means more than helping 5 million indigent women; it means helping to establish standards of family size, which everyone can understand and follow. The rule of no more than two children must become fundamental and must be embedded in morality and custom everywhere.

That standard is statistically necessary, I am sure you realize, and the statement is not just a statement made in thin air. It can be supported as the necessary policy which must be established beginning in this country.

The Government can help in many ways—by clinics, tax adjustments, and the like—but the main work has to be done by the people of the United States themselves through their voluntary organizations, their democratically controlled school systems, and their churches. The Government, including Congress, needs to create the climate.

Planning for public works should be directed toward a short-term increase in population, followed by a fairly quick stabilization and a trend toward reduction.

The assumption that our population will go on expanding forever is incorrect. It can't. The American people know better. It is not going to go on expanding forever.

This assumes the general acceptance of a rule of not more than two children in family planning. It assumes that the American people are a highly intelligent, well-intentioned, and well-educated Nation, which is the truth, and that when enough people understand the facts, they will act accordingly. Planning for an everlasting growth in the economy and population is absurd.

We need to revise our basic national philosophy about an expanding economy. The gross national product does not necessarily measure the good life. We should be working toward a contraction of the economy in some areas, an expansion in others; in other words, a differential stabilization, geared to genuine human needs.

With respect to the distribution of responsibilities, the legislation which has evolved during the last decade or so on pollution, recreation, watershed management, and the like, has usually taken the form of having the Federal Government establish standards in consultation with the States, or having the States present programs for the approval of the Federal Government, followed by very substantial financial assistance from the Federal Government to the States and localities. This is a good democratic system with a rational measure of both decentralization and coordination. State and local initiative and participation must be encouraged because these problems cannot be solved at the Federal level alone. Indeed, a large part of the problem is to stop Federal assistance to construction programs which are destructive to the environment and the people who inhabit it.

Many of these questions are going to be settled by the young people of this country, who are going to live a long time with the present mess. Those Senators and Congressmen who have encouraged the teach-ins and other youth activity should be commended. We hope to lend our assistance to these activities if invited.

Allow us to commend you also on the call for the Environmental Decade. It is a good name for the decade, because unless we get our environmental problems under control, it may be the last decade.

Mr. REUSS. Thank you, Mr. Smith.

Mr. Pomeroy?

STATEMENT OF KENNETH B. POMEROY, CHIEF FORESTER, AMERICAN FORESTRY ASSOCIATION

Mr. POMEROY. I am Kenneth B. Pomeroy, chief forester of the American Forestry Association. The members of our organization are pleased that an action program for the Environmental Decade of the 1970's is being considered now. We pledge our assistance and cooperation in this vital undertaking.

People have known for a long time that trees have important beneficial influences upon man's environment. Perhaps the easiest way to describe this is to turn to this cartoon which shows trees and people hand in hand. They give us clean water, provide food, give shade and protection, give products, they give us recreation. Trees provide homes for wildlife. They create beauty and bring us joy. I have had many letters from members of the association about this cartoon since it came out asking if we had posters, if we had slides that they could use. It has attracted a great deal of attention.

Trees help purify the air by filtering out particles, absorbing carbon dioxide and releasing oxygen. They return moisture to the atmosphere. They deaden sound and moderate strong winds. They provide shade for a microclimate in which tiny organisms convert dead leaves and twigs to usable material for new plants.

The present pressing need for an action program stems from the fact that most people take their environment for granted and do nothing constructive about it until it is too late. Fortunately there still is time to improve the environment in America and the Congress of the United States is the right body to do something about it. The Congress can marshall the facts, weigh the evidence, decide who is best equipped to do what, allocate funds, coordinate activities, and evaluate results.

In view of the many important direct effects that trees have upon the environment, I would like to present some of the key recommendations contained in "A Conservation Program for American Forestry." This program was developed by 40 of the leading scientists in the country and was endorsed almost unanimously by the members of our association.

Forest conservation involves eight major areas, of which four are directly related to the environment in one way or another.

I. PROTECTION

The protection of forest, range, and watershed lands against damage by destructive agencies is basic to long-range management. About 21 million acres of forest land are completely unprotected from fire. Only partial protection is provided for 240 million acres. In addition, about 500 million acres of rural land, lying outside of recognized forest boundaries, receives little protection.

We recommend—

(1) That the Federal share of cooperative forest fire protection be brought up to the full authorization of $20 million annually as provided in section 2 of the Clarke-McNary Act.

(2) That a national wildfire disaster fund of $10 million be established, as proposed in H.R. 11597.

(3) That a rural fire law be enacted as proposed in H.R. 11413.

II. RESOURCE MANAGEMENT

The maximum benefits to the economy and to society can be realized if forest and related lands are administered under a multiple use concept of management. But millions of acres are unproductive, many watersheds are unmanaged, recreation potentials are not being realized, wildlife habitat needs improvements, and mining upon publicly owned lands should be brought into harmony with other uses. At present mining takes precedence over all other uses.

We recommend especially—

(1) That idle lands be reforested.

(2) That the Mining Law of 1872 be overhauled.

III. RESEARCH AND SURVEYS

In all phases of forest and related land management and use, the continuous pursuit of new knowledge is highly essential.

We recommend—

(1) That forest research dealing with timber, watershed, wildlife, range, and recreation resources be accelerated.

IV. ASSISTANCE TO LANDOWNERS

Nearly 60 percent of the Nation's commercial forest land is held by some 4½ million private owners. Much of this land is managed poorly if at all. Yet the environmental effects of poor forest management are of direct concern to all citizens.

We recommend—

(1) That advice and guidance for forest owners be provided on an accelerated basis.

(2) That cost-sharing be provided for practices that are in the public interest.

(3) That long-term credit be provided.

(4) That forest insurance be provided by the Federal Crop Insurance Corporation.

(5) That taxes be assessed upon the productive capacity of forest land instead of its speculative value for other purposes.

I would like to point out some of the letters I have been receiving in the last 3 weeks. A lady who lives within easy driving distance of New York writes about her 125-acre property that she bought just so she would have some woods of her own to enjoy. She didn't buy it for timber production. She bought it a long time ago because she got it at $20 an acre. You cannot buy much land at that price anymore. Within the last 2 years her tax bill has jumped from $190 to $987 annually. Now, this lady is a widow living on a veteran's pension and she points out she just cannot keep that land that way. This is a question that comes up more and more frequently with land that is near communities. With respect to this one, as Congressman Gude knows, it extends all the way out to Frederick and beyond. Land values have escalated to the point where the tax bite is keeping the owners from putting it into good forest management.

Mr. **Reuss**. You would favor something like the Wisconsin forest crop tax law which substantially exempts forest lands from taxation as long as they are maintained on a sustained basis?

Mr. **Pomeroy**. That is correct. Some type of local ordinance, zoning ordinance, is widely needed. In Massachusetts, I am told that in some counties the citizens decide what portion of the county is to be maintained primarily as forest and what parts of it are to be for industrial development and for urbanization; and with the areas that are designated for continuous use as forests, the taxes are related to the productive capacity of the land. I think we are going to need more of that, especially in the East.

To continue with my prepared statement: Within the past 3 years two groups have been organized for the specific purpose of aiding the owners of private, nonindustrial forest land.

The Southern Forest Resource Committee, sponsored jointly by five forest, farmer, and trade associations, recognizes that 70 percent more softwood and 40 percent more hardwood must be produced by Southern forests to meet timber needs in the year 2000. The committee recommends a 14-point program of which the two most urgent are planting of idle lands and protection from damage by fire, insects, and disease.

Trees For People, another group with nationwide concern of which I happen to be the national chairman, is composed of representatives of conservation associations, forest industries, landowners, public agencies and others. This group seeks to—

(1) Create public awareness of the need for improved forest management.

(2) Develop incentives to encourage sound management.

(3) Develop appropriate legislation at all levels of government.

(4) Encourage strong research programs.

(5) Make available knowledge of improved practices and services.

The current issue of American Forest magazine contains a list of 27 key aims and objectives developed by the American Forestry Association and other members of the National Resources Council of America. I would offer this list of 27 for the record and I would like to point out five that are of key interest to this particular committee. First, as a primary principle, we must retain ownership of Federal lands, specifically including lands chiefly valuable for timber production and grazing to provide for present and future human needs since these lands belong to all the people.

Item 9, to provide sufficient funds, manpower, and authority to manage the public lands, assure public access, and control trespass, vandalism, and other unauthorized uses.

Item 11, reaffirm the principle of the multiple use acts that the best use or combination of uses of public lands is not to be decided on the basis of the greatest dollar return or the maximum production of a single commodity.

Item 13, to give quality of the environment overriding consideration in deciding uses and combination of uses on public lands.

And lastly, and one we think is of great importance, to repeal the antiquated mining law of 1872 and replace it with the mineral leasing system. Thank you, Mr. Chairman.

(The 27 key aims and objectives which were printed in the January 1970 issue of American Forest magazine, and to which Mr. Pomeroy referred, follow:)

AFA's 27 Points

1. As a primary principle, we must retain ownership of Federal lands, specifically including lands chiefly valuable for timber production and grazing, to provide for present and future human needs, since these lands belong to all of the people.

2. We must retain and complete the national forest system and provide accelerated acquisition of inholdings for improved management.

3. Disposal of Federal lands should be permitted only when demonstrated public needs indicate a higher public service will be achieved.

4. We must provide an organic act for the Bureau of Land Management containing authority to manage the lands on a permanent basis, and retaining the major provisions of the Classification and Multiple-Use Act of 1964.

5. Repeal the Homestead, Desert Land, and other acts inconsistent with an organic act.

6. Make BLM lands eligible for classification under the National Wilderness Act.

7. Provide BLM with adequate acquisition and exchange authority to facilitate consolidation of Federal land ownership.

8. Make BLM eligible to participate in such programs as the Land and Water Conservation Fund.

9. Provide sufficient funds, manpower and authority to manage the public lands, assure public access, and control trespass, vandalism, and other unauthorized use.

10. Give high priority to surveying and marking boundaries of Federal lands.

11. Reaffirm the principle of the Multiple-Use Acts that the best use or combination of uses of public lands is not to be decided on the basis of the greatest dollar return or the maximum production of a single commodity.

12. Use a comprehensive planning and coordinating approach in developing and administering Federal programs.

13. Give quality of the environment overriding consideration in deciding uses and combinations of uses on public lands.

14. Give fish, wildlife, recreation, and esthetics full consideration with other values in the use of public lands.

15. Support and encourage State and Federal efforts to protect and preserve natural areas and rare and endangered species.

16. Require that more attention be given to the perpetuation of nongame species of fish and wildlife on public lands in full cooperation with State fish and wildlife agencies.

17. Affirm that where hunting or fishing is allowed on Federal lands that it must be done within State laws and regulations.

18. Provide for improved administration, including expanded research and the application of strict environmental controls, of the resources of the Outer Continental Shelf.

19. Repeal the antiquated mining law of 1872 and replace it with a mineral leasing system.

20. Assure that the United States receives fair market value for resources and services from the public lands where collection is economically feasible, specifically including those marketed for private profit.

21. Require use of competitive bidding wherever possible as the means of establishing fair market value for public land resources.

22. Charges should be made for recreational uses of public lands where substantial developments have been provided and regular maintenance and supervision are required.

23. Base all Federal land revenue sharing with State and local governments on property tax equivalents, adjusted by impartial evaluation of benefits and burdens attributable to Federal lands within State and local jurisdictions.

24. Affirm the principle that Federal land permittees are not entitled to any equity or right to reimbursement at the expiration of their term permits.

25. Enforce the principle that the user of any Federal land resources does not attain any "right" to the use of or interest in the land. This principle must be upheld at all costs.

26. Assure that judicial review of appeals from local decisions relative to the protection of public land values should occur only after full use of existing administrative appeal procedures.

27. Grant no additional waiver of the sovereign immunity of the United States in litigation of private claims.

Mr. Reuss. Thank you, Mr. Pomeroy.

From the American Institute of Architects, Mr. Allen.

STATEMENT OF REX WHITAKER ALLEN, PRESIDENT, THE AMERICAN INSTITUTE OF ARCHITECTS; ACCOMPANIED BY DONALD L. WILLIAMS, CHAIRMAN, COMMITTEE ON REGIONAL DEVELOPMENT AND NATURAL RESOURCES, AIA; AND JAMES A. VELTMAN, ECOLOGICAL PLANNER AND PRACTICING ARCHITECT

Mr. Allen. Thank you.

My name is Rex Whitaker Allen. I am a practicing architect from San Francisco, Calif., and president of the American Institute of Architects, a 23,300-member professional society of licensed architects.

I am a member of the Public Health Association, and the American Hospital Association. I was responsible some years ago for the establishment of a joint committee of the American Medical Association in environmental health, and I recently had the privilege of representing AIA at the UNESCO Conference in San Francisco on "The Environment of Man."

Accompanying me are Donald L. Williams, assistant director, Urban Studies Center of the University of Louisville, Louisville, Ky., and chairman of AIA's Committee on Regional Planning and Natural Resources; and James A. Veltman, an ecological planner and a practicing architect from Philadelphia, Pa.

You may wonder why we are concerned about the natural environment. As architects we deal with space for human use. We have been trained to be sensitive to the effects of environment on man.

Our training has given us some understanding of how to control development. We recognize that in ecology as in physics every action has a reaction.

A second reason for being here is to make specific recommendations for Government action to protect our habitat during the decade of the 1970's and beyond.

A QUESTION OF VALUES

In the 1960's the American Institute of Architects launched a broad program of public education which focused attention on urban blight—air and water pollution, improper planning and zoning, the waste of environmental and cultural assets caused by uncontrolled growth, and many other man-created problems in our physical and sociological environment.

The purpose of the program was to alert Americans to what is happening to the environment. We believe we can take some credit for the recent attention that is being paid to environmental questions by private citizens, the press, and our public officials.

Mr. Chairman, we believe that the problems of the environment are really relatively simple. It is just a question of where one places the values. For too long Americans have subordinated environmental considerations to progress, economics, and technological growth.

Mr. REUSS. What about war?

Mr. ALLEN. I have a personal opinion about that, and I would feel that this has been one of the greatest detriments to our progress in controlling the environment.

I would certainly place emphasis on environment when war is a destructive way of spending money and environment is certainly a constructive one.

(Continuing with prepared statement.) Americans have been careless with their environment. Earlier assumptions—that if a place became polluted one could move on, or that if one chemical polluted the river, another chemical could make it clean again—are being challenged. In our opinion environmental considerations, questions of health and livability, must be placed high on the scale of values.

ESTABLISHING NATIONAL PRIORITIES

We feel it unnecessary to list the environmental ills facing this Nation and the world today. We are all aware of them. The more important task is to point out action which we believe should be taken by this committee, the Congress, and Federal, State, and local governments.

The first step that must be taken is to consider where the task of cleaning up the environment fits in our order of national priorities. We share President Nixon's concern that it ranks at the top of the list. We hope that other elected officials, particularly at the Federal level, will help harness the forces of Government to reverse the spoiling of our environment in the next 30 years of the 20th century.

GOVERNMENT ORGANIZATION

Assuming that Americans are committed to control environmental pollution—I am not sure we are yet, but I hope we will be—it will be necessary to reshape the government institutions that must deal with the problems.

The Federal Government should review its organizational structure. Jurisdiction of congressional committees sometimes overlaps on environmental problems. Different Federal agencies deal with various aspects of water pollution. Unfortunately, State and local government presents a similar picture.

This subcommittee and the full Government Operations Committee share in the responsibility for reorganization of the executive branch and promoting economy and efficiency of government operations at all levels. Accordingly, we believe immediate steps should be taken to streamline the machinery of Federal, State, and local government to deal effectively with environmental problems.

At the Federal level, we believe the Council on Environmental Quality should be the main body around which other units of the executive branch and Congress reorganize. If one considers the Council on Environmental Quality to be comparable in organization to the Council of Economic Advisers, it would seem appropriate to set up a Joint Congressional Committee on the Environment similar to the Joint Economic Committee as the focus for congressional concern.

We believe that a National Pollution Abatement Authority should be formed to promulgate and administer environmental quality standards and to develop an information base that will allow us to determine the true costs of growth and development. The authority we envision might be granted power for pollution control comparable to that granted the Federal Trade Commission for maintaining our private enterprise system. The authority might be an arm of the Council on Environmental Quality. It should report, at the congressional level, to the Joint Committee on the Environment we referred to earlier.

Our environment is a natural resource that belongs to us all and as such is a public responsibility that can only be protected by enlightened governmental controls.

In our opinion the Cabinet-level Council on Environmental Quality should make it clear to public and private polluters that property rights do not provide a basis for contaminating the environment.

The National Pollution Abatement Authority, backed by the Council, should have authority that is socially, economically, and technically feasible to stop environmental pollution.

In dealing with pollution caused by a particular industry, pollution should be stopped simultaneously by all firms so that their relative competitive positions will remain constant. It is possible that some firms that have been gaining competitive advantage by not using pollution control techniques will have a greater burden to conform, but this seems only fair. Society should insist that unaccounted-for social costs will not be tolerated in the production process. As Mr. Nixon has said: "To the extent possible, the price of goods should be made to include the cost of producing or disposing of them without damage to the environment."

Should cases arise where polluting industries must close down due to the cessation of their polluting privileges, special governmental assistance may be in order. Where unemployment may arise due to cleaning up an industry, the Government should step in with programs of job training, industrial relocation incentives, and even resettlement policies.

USE OF THE COURTS

Reportedly, it could cost between $200 and $300 million to restore Lake Erie to a reasonable environmental level; that is, to bring industrial pollution under control. If this were taken out of public revenues, it would amount to about $15 per year per capita over a 5-year period for the people who live in the U.S. portion of the Lake Erie Basin.

If Lake Erie were privately owned and the Government wanted to pollute it, the courts would require $200 to $300 million in just compensation for pollution rights. The question to ask is: Has industry provided just compensation to the public? We think not.

AIA believes that litigation should be initiated by Federal, State or private citizens over: The pollution of Lake Erie, the oil spills along the California coast, the strip mine erosion of Pennsylvania, or in any other suitable environmental disaster area, to determine the liability of industry for its contribution to the destruction of the environment.

We applaud efforts, such as those of Illinois Attorney General Scott, in bringing Commonwealth Edison and other polluters into court. Admittedly, laws do need to be strengthened but innovative citizens' suits should be undertaken. In our opinion, many pollution cases present the classic requirements for equitable relief.

Public bodies are as guilty as private industries for the sorry state of the environment. Local government has not been able to do an adequate job in dealing with sewage treatment and solid waste disposal. Local governments should be given a deadline to bring water pollution to tolerable levels. If local government will not do it, the Federal Government should step in, build the required facilities and recoup the cost via special tax provisions. We believe that this kind of resolve would cause a rapid formation of local political institutions to deal with many pollution problems. We suggest that regional or interstate compacts be encouraged and that Federal assistance be based on comprehensive plans for a geographic region rather than on a local, piecemeal basis.

NATIONAL FOUNDATION FOR THE ENVIRONMENT

To complement the Council on Environmental Quality and the National Pollution Abatement Authority, we recommend the formation of a national foundation for the environment. We believe that a seed money grant in the amount of $5 million to start the foundation would generate a significant amount of public philanthropy.

The foundation would provide a focal point for private citizens and organizations to express their environmental concern. It would operate as the country's major overseer of environmental issues and would provide an independent early warning system for potential threats to the environment.

We would expect the foundation to study and analyze the social, political, economic, and ecological factors influencing management of the environment. The foundation should also undertake a large-scale public information and education program aimed at the mass media and school curriculums.

CONCLUSION

These are only a few suggestions as to what needs to be done to come to grips with America's environmental problems.

Mr. Williams and Mr. Veltman are here to discuss the relationship between the development of the environment and an inventory of natural resources.

We look to you, our elected officials, for leadership in reversing the course of disregard for the environment. We recognize that you have a hard task but we can't think of anything more important for the survival of the Nation and the world.

Thank you for the opportunity to present our views.

Mr. Reuss. Thank you, Mr. Allen.

If your associates have additional or supplementary material, we would be most happy to receive it.

Mr. Allen. Would you prefer to hear this now or have it as part of the question period? They are here to answer questions.

Mr. Reuss. It is good to know they are available for questions which will give you an opportunity to establish a dialog with us.

It is significant that we have before us this morning the city planning and urbanism people, the forestry people, the parks and outdoor recreation people, and the health people. So we cover a very good spectrum of the environment today.

I would like, perhaps, to focus the discussion a bit on the budget, which came forward yesterday, and which, after all, is the measure of how we order our national priorities.

Let me ask Mr. Smith first: I notice in the budget that while the projected outlays for the National Park Service in fiscal year 1971 remain substantially where they are for fiscal year 1970—it was $147 million for the activities of the National Park Service for fiscal year 1970, and for fiscal year 1971 it is $151 million. Land acquisition money is, of course, funded to the Bureau of Outdoor Recreation.

That is to be compared with the requested outlays for the Corps of Engineers, which were $1.235 billion in fiscal year 1970 and would go up to $1.395 billion in outlays in fiscal year 1971. That is an increase of $160 million, which increase in 1 year is more than the total allotted to the National Park Service. And I note that the total for the Corps of Engineers is almost 10 times that allotted to the National Park Service.

Do you think, Mr. Smith, that that represents a good judgment on national priorities or not?

Mr. Smith. It is an extremely bad judgment on national priorities. The Park Service always had to struggle with an inadequate operating budget. The Land and Water Conservation Fund, which is closely related to the Park Service operating budget, needs at least to be freed to the place where its funds can be used, and it should be sharply increased. I would think we should channel some of the big highway revenues picked up from the highways—gasoline taxes and what ever else we have—and get it over into environmental protection, including the national parks. With regard to the Corps of Engineers, it is an extremely serious matter for this country to spend billions of dollars every year on useless dams on rivers which are destructive. That is something that has just gotten underway in the course of the last 30 years. It gained a momentum of its own. It is a basic governmental operation problem and many of us would be very happy to see this subcommittee really look at that one. This short circuit that you have between the Public Works Committees in both Houses and the Corps of Engineers needs to be broken. Recommendations from the executive branch need to come through the President. They ought to go through the Bureau of the Budget process. They are not going through that process now. They should go through the Council on Environmental Quality. There should be no recommendations submitted to burden Congress with from the executive branch unless they are cleared through those agencies. Certainly through the Council on Environmental Quality.

Mr. Reuss Thank you.

Another item has to do with Federal grants to States and municipalities for the construction of water pollution abatement facilities. I will perhaps address this question to Dr. Purdom. This year, fiscal year 1970, there was an authorization of $1 billion and Congress finally appropriated $800 million for that purpose, which, with a $65 million carryover, comes to $865 million. The budget, even though the authorization for fiscal year 1971 is $1¼ billion, recommends only $1 billion for fiscal year 1971 in contracts, not direct grants, and proposes continuation of this program at the rate of only $1 billion for the following 3 years. In your judgment, are those amounts going to be sufficient and is there an adequate judgment as to national priorities—taking into account the $275 million in the budget for the supersonic transport plane; the $73 billion in there for the Defense Establishment; and the $3½ billion for the space program, and so on.

Dr. Purdom. Mr. Chairman, these are matters of concern to our association. We have them under study. I don't have precise figures at hand. We would like the opportunity to present some suggestions concerning this at a later date. However, I don't think that you are going to clean up the pollution with the amounts you mentioned.

Mr. Reuss. The President has stated that he will recommend expenditures of $800 million a year for the next 5 years on Federal grants for water pollution control facilities. Is there any panel member who thinks that this is adequate to cope with this country's water pollution problems? Dr. Smith shakes his head no. Mr. Allen says no. Dr. Pomeroy, do you say no also?

Dr. Pomeroy. It will take a lot more money than that to do the job.

Mr. Reuss. Let me address a question to the architects: In fiscal year 1971, Congress authorized an appropriation of $1.7 billion for urban renewal to help cities and towns convert slums into attractive areas. The budget request is for only $1 billion, the same sum appropriated for fiscal year 1970. In your judgment, Mr. Allen, is that paying adequate attention to the urban renewal problem?

Mr. Allen. No; I don't feel it is. I think, of course, the urban renewal problem isn't just a fiscal problem by any means. It must be attacked from many angles. But I am sure that the deteriorating condition of all of our central cities is going to require much more money.

Mr. Reuss. Let's turn now to open space—a matter of concern to everyone, particularly to the architects and the national parks people. The budget asks for an outlay of $75 million for open space in fiscal year 1971, representing no increase over the amount appropriated last year, and some $10 million below the congressional authorization level. Do you think that is enough, Mr. Smith?

Mr. Smith. No. It is quite inadequate. The whole open space problem has got to be tackled quickly now because the kind of thing Mr. Pomeroy spoke of with respect to timberland is also affecting farmland around our metropolitan areas. We need some changes in the tax laws. We also need, I think, to make better use of covenants running with the land in perpetuity to hold the land in its present use. So we need a combination of tax incentives and also of acquisition. Not only acquisition of land in fee simple, but the acquisition of the so-called easements; and this will take money. If we mean it, we had better get going.

Mr. Reuss. Thank you. Mr. Williams?

Mr. Williams. I think this is the point where the Institute would like to say that there is a relationship between development and open space and that we have to learn how to handle this relationship by deciding where we are going to locate the growth that is already committed. We certainly endorse the kinds of policies with reference to population control discussed this morning but, as a profession, we are faced with the problem of how to handle the population that is already committed for the next third of this century. We have the technical ability. When I say "we," I mean all the environmental professions, not just architects, to help determine where the Nation should urbanize and where it should not. This relates directly to an open space program. We can, through ecological inventories, determine how to best use the land and base this decision on a factual rational basis rather than on previous considerations where we had to say, "Yes, we think that is where development ought to occur." However, if we did this and defined that urbanization should occur here in this region, and that conservation and preservation for open space should occur someplace else, the legal tools are not at hand at this moment to insure that that would happen. It is what Mr. Smith speaks about. The funds that are needed in order to insure that land is put into the public domain are not available.

Mr. Allen. It seems to me that this points up a real need to develop a policy for land planning. I have witnessed, in the course of the last 20 years in the Santa Clara Valley, the rape of a beautiful farm country that is really irreplaceable in terms of the types of crops that were produced there—the orchards of apricots and prunes that really cannot be replaced anywhere. This has now been turned into an urban sprawl of endless houses. I think we cannot afford to continue this kind of development. I think we have to find ways to control this, and I think this can only be done by land planning—by determining the best usage for land and providing the mechanisms to keep the land in these uses.

Mr. Reuss. Thank you. Mr. Wright?

Mr. Wright. Mr. Chairman, I am disturbed by the turn certain questions took a few moments ago relating to the Corps of Engineers. Now I am fully aware that it has become fashionable, and even fadish, among some people who style themselves conservationists to make the Corps of Engineers their favorite scapegoat. I heard responses offered by Mr. Smith to questions put by the chairman in which Mr. Smith seemed to feel that the Corps of Engineers, No. 1, was spending too much money; and No. 2, had a sort of covert relationship with the House and Senate Public Works Committees, on one of which I serve. And No. 3, that the Corps of Engineers had the capacity somehow to get authorization and appropriations for projects that weren't properly cleared through the Bureau of the Budget and other related agencies. I would like to ask Mr. Smith if he is of the impression that the House and Senate Public Works Committees, particularly that in this body, follow the practice of just willy-nilly approving projects and getting them built without very carefully analyzed benefit-cost ratios and the effect on the environment totally. Do you have that impression, sir?

Mr. Smith. I am sure the House and Senate Public Works Committees discharge their responsibilities with responsibility and make every effort to get at the facts. The fact of the matter is, nonetheless, that proposals are being submitted to these committees which are not being reviewed by the Bureau of the Budget.

Mr. Wright. Would you give me an illustration?

Mr. Smith. Yes. We have six proposals before the Public Works Committees of the House and Senate now, in the Potomac River Basin, which have not been cleared by the Bureau of the Budget. Not one.

Mr. Wright. Could the gentleman give me some statement as to when they were submitted to the Bureau of the Budget for its review?

Mr. Smith. They have not been submitted to the Bureau of the Budget.

Mr. Wright. Does the gentleman have a notion that they have come to the Public Works Committee short of being submitted to the Bureau of the Budget?

Mr. Smith. Yes, sir; they have.

Mr. Wright. Have they been submitted with executive approval by any agency?

Mr. Smith. No; not even by the Secretary of the Army.

Mr. Wright. Then they probably will not be acted upon by the House Public Works Committee.

Mr. Smith. I fully expect them to be acted on. I expect them to be included in the rivers and harbors bill—the omnibus bill for rivers and harbors—this year. At least two of them.

Mr. Wright. Let me say I am a member of the House Public Works Committee and have been for 15½ years. During that time, of all of the projects that have been approved by that committee, I would say that probably 97 percent of the financial authorizations have come with the prior approval given by the Bureau of the Budget. There might be a few isolated instances to which one could point. I can think of one or two. Those I can think of had languished in the Bureau of the Budget without any report whatsoever for 1½ or 2 years. I should like to say to the gentleman that the Congress of the United States, under the Constitution, has the responsibility of authorizing these projects, and that we should not be limited in our capacity to act by some appointive agency. Do you disagree with that?

Mr. Smith. Well, Mr. Wright, all I can say is that what you have here as an example in the Potomac is that the Army Corps of Engineers testified recently before the Senate Committee on Public Works—I was present—that they were recommending six reservoirs in the Potomac River Basin: Sixes Bridge, Town Creek, Sideling Hill Creek, Little Cacapon, North Mountain, and Verona. They stated at the time that these recommendations did not have the approval of the Secretary of the Army except in two instances: They expected the Secretary of the Army to recommend Sixes Bridge and Verona.

I inquired into the question 2 weeks ago, as to whether the Secretary of the Army had recommended Sixes Bridge and Verona to the Bureau of the Budget. The answer was no. The Secretary of the Army at that time had not recommended any of them. The Bureau of the Budget had not acted on any of them. The President had not commented on any of them. That is the situation. All I am saying is that there is not an efficient and well-organized relationship.

Mr. WRIGHT. Now the gentleman cites four projects on the Potomac River with which I, regrettably, am not intimately familiar. What is the overriding justification offered for those specific projects? Is it flood control? Water supply? What is their purpose?

Mr. SMITH. When they were first proposed, the benefit-cost ratios showed benefits for dilution of pollution. These have now been withdrawn, because it has become apparent in the last 10 years—we have been fighting this for 15 years; the people have been fighting these reservoirs for 15 years—that the benefit-cost ratios are now based on water supply, mainly for the city of Washington. The water is right out here in the estuary of the Potomac River. There are 125 billion gallons of fresh water suitable, after normal chlorination and filtration, to be placed in the reservoir and used by the city.

Mr. WRIGHT. Does the gentleman contend that the waters of the Potomac are suitable to be taken right out of the Potomac and treated by chlorination and——

Mr. SMITH. I do. The Army Engineers have stated this is the case.

Mr. WRIGHT. If they state that is the case, what is their justification for these reservoirs?

Mr. SMITH. We have been unable to find any justification for them, except that Washington is about to die of thirst, which isn't the case. This is the kind of thing we have been subjected to for many years. Technical studies of these reservoirs have been prepared showing that the benefit-cost ratios, which are marginal by the Army's own figures on all six of them, are basically down around 0.2 and 0.3. I would be glad to send you the studies.

Mr. WRIGHT. That would be fine. If the gentleman has those studies I would be happy to see them.

(The studies referred to and Mr. Smith's accompanying letter to Congressman Wright follow:)

CITIZENS PERMANENT CONFERENCE ON THE POTOMAC RIVER BASIN,
Washington, D.C., February 3, 1970.

Hon. JAMES C. WRIGHT, Jr.,
House of Representatives,
Washington, D.C.

DEAR CONGRESSMAN WRIGHT: It was a pleasure to talk with you today at the hearing of the Conservation and Natural Resources Subcommittee of the Committee on Government Operations.

You expressed interest in the study I referred to about the benefit-cost ratios of the dams advocated by the Army Engineers for the Potomac River, and I enclose several copies; also enclosed is an earlier study of Mr. Fosdick feasibility of the freshwater estuary on the Potomac as a source of supplemental water in emergencies for the Washington metropolitan area.

A permanent solution to the water problems of the metropolitan area can be achieved by the estuarial intake at a present cost of $5 million, and an ultimate cost of $10 million, as against the present cost of about $500 million for the Army Engineers big-reservoir approach, and an ultimate cost of perhaps $1 billion. In other words, the estuarial system will cost about 1 percent of the Army Engineers system. The savings could be used for the complete elimination of all pollution and a major urban renovation program.

This is fact, not fantasy. Mr. Fosdick is a consulting engineer to the Senate Committee on Interior and Insular Affairs; he has been a top level engineer to the

Bureau of Reclamation, the Federal Power Commission, and the Bonneville Dam Administration; he is currently consulting engineer to AID, the Department of State, and the United Nations. He is consulting engineer to the Citizens Permanent Conference on the Potomac River Basin (Citpercon), which speaks for the massive movement of farm, labor, conservation, and citizens organizations which has been resisting the Army Engineers programs for the Potomac River Basin for a decade or more.

Citpercon has indicated that if any of the major dams proposed by the Army Engineers for the Potomac River Basin are included in the omnibus bill for rivers and harbors this year it will recommend a veto of the entire bill. These dams include the Sixes Bridge, Verona, Town Creek, Sideling Hill, Little Cacapon, and North Mountain.

Citpercon favors the construction of a network of headwaters impoundments of the watershed management type throughout the Potomac River Basin for flood control, local water supply, and natural outdoor recreation.

If we can be of any assistance to you, either in your work with the Conservation and Natural Resources Subcommittee of the House Committee on Government Operations, or in connection with the work of the House Public Works Committee, we will be happy to cooperate.

With all good wishes.

Cordially yours,

Anthony Wayne Smith,
General Counsel.

Financial Feasibility of the Six Reservoir Projects Recommended to the Senate Public Works Committee on September 17, 1969, by Ellery Fosdick, Consulting Engineer, Citizens Permanent Conference on the Potomac River Basin, Washington, D.C., December 1969

The benefit-cost ratios for the six reservoir projects recommended by the Corps of Engineers to the Senate Public Works Committee at the hearing on September 17, 1969 (Sixes Bridge, Verona, Town Creek, North Mountain, Sideling Hill, and Little Cacapon) indicate that all of the projects are financially unfeasible after adjusting the benefits by eliminating the benefit for water quality and by reducing the benefits as subsequently discussed herein for water supply and preservation of the free-flowing stream environment in the Potomac River below the metropolitan area's water supply intakes. These projects have been proposed primarily to augment the supply of municipal water for the Washington metropolitan region for about 20 years, after which additional reservoir projects would be needed.

Basic data for the benefit-cost ratios shown in table attached hereto have been taken from the report submitted at the hearing by the Corps of Engineers. The amounts used in adjusting the benefits for water supply and the preservation of free-flowing environment of the Potomac River below the metropolitan area's water supply intakes have been taken from table 2 for the year 1990 that is contained in the report "The Potomac River Estuary as a Supplemental Source of Municipal Water for the Washington Metropolitan Region," that was published by the National Parks Association in January 1968. The cost for pumping water from the estuary in the year of 1990 shown in table 2 is:

Basic requirement	$348,000
Minimum flow maintenance	86,000
Total	434,000

BENEFIT ADJUSTMENTS

Benefits from water supply shown in this table, which will accrue primarily to the Washington metropolitan area, have been reduced to reflect the lower cost if this water is supplied from the upper part of the Potomac River estuary as the benefits or revenue from water sold to the water users will, it is expected, be lower as a result of the lower cost of the water obtained from this source.

Benefits for water quality have been eliminated in table A, as pollution abatement required under the Federal Water Pollution Control Act is expected in lieu of the proposed dilution of pollution by increasing streamflow with releases of stored water from the reservoir projects.

Benefits from the preservation of the free-flowing stream environment of the Potomac River below the metropolitan area water supply intakes have been reduced to reflect the lower cost of accomplishing this when water is obtained from the upper part of the Potomac River estuary as the benefits cannot be directly determined in terms of money, since little revenue will be derived therefrom. The benefits remaining after making these adjustments are chiefly for recreation.

[In percent]

	Recreation	Other
Sixes Bridge	93	7
Verona	91	9
Town Creek	56	44
North Mountain	75	25
Sideling Hill	61	39
Little Capacon	69	31
Combined total	81	19

The annual cost for these six reservoir projects would be increased by about $500,000 if the amortization period used is the more usual 50 years, instead of the 100 years used by the Corps of Engineers in the report submitted at the hearing. This increase in annual cost would further reduce the benefit-cost ratio for the six reservoir projects by about 7 percent.

CORPS' COSTS HIGH

The total cost of constructing these six reservoir projects, estimated at $125 million, 1967 costs by the Corps of Engineers ($137 million, 1969 costs) appears high, particularly when consideration is given to the low probability of needing the supplemental water stored in the reservoirs for water supply and the relatively small quantity that might be required. By 1990 supplemental water will be needed for water supply for a total of only about 40 days in case of a maximum drought, the amount varying from a very small quantity up to a maximum of about 400 million gallons per day including water required to maintain a minimum flow of 100 million gallons per day over Little Falls. The probability of supplemental water being needed in that year is very low however.

By contrast the total cost of constructing a 400 million gallons per day pumping plant to supply water from the estuary when supplemental water is needed is only $4.7 million, 1967 costs ($5.2 million, 1969 costs). The total cost for operation and maintenance, depreciation, interest, and replacements in the year 1990 in the event of a maximum drought would be about $434,000 as compared with a cost of $2,592,000 for water supply and preservation of the free-flowing stream environment if supplied by the proposed reservoir projects. The annual cost of the pumping plant will be increased by about $70,000 if an interest rate of 4⅞ percent is used instead of 3⅛ percent.

The addition to the Potomac River pumping plant of the WSSC now under construction will make it possible to take more water from the river and thence will leave less of it to flow on down to the Great Falls and Little Falls intakes of the Washington Aqueduct. This addition to the pumping plant is probably being constructed with the expectation that reservoir projects will be constructed upstream to augment the flow of the river, although these projects have not yet been authorized.

The desirability of taking water from the upper part of the Potomac River estuary should be called to the attention of the Washington Suburban Sanitary Commission. Water taken from the estuary could, after treatment, be pumped directly into the WSSC mains in sourthern Prince Georges County instead of transporting it by pipe for about 40 or 45 miles from the Potomac River pumping plant. This would obviate some of the pipeline right-of-way problems that are frequently experienced, and also probably reduce the cost of water.

TABLE A

[In thousands of dollars]

Reservoir project	Total per Corps of Engineers report	Less adjustment for water supply	Less water quality	Less adjustment for PSE	Adjusted total
Sixes Bridge:					
Annual benefit	1,527	65	386	333	743
Annual cost	1,315				1,315
Benefit-cost ratio	1.2				.6
Verona (Staunton):					
Annual benefit	2,870	80	1,524	461	805
Annual cost	1,539				1,539
Benefit-cost ratio	1.9				.5
Town Creek:					
Annual benefit	1,131	92	587	290	162
Annual cost	891				891
Benefit-cost ratio	1.3				.2
North Mountain:					
Annual benefit	1,865	142	2	416	1,305
Annual cost	1,608				1,608
Benefit-cost ratio	1.2				.8
Sideling Hill:					
Annual benefit	888	86	354	276	172
Annual cost	867				867
Benefit-cost ratio	1.0				.2
Little Cacapon:					
Annual benefit	954	83	396	268	207
Annual cost	1,198				1,198
Benefit-cost ratio	.8				.2
Total:					
Annual benefit	9,235	548	3,249	2,044	3,394
Annual cost	7,418				7,418
Benefit-cost ratio	1.2				.5

THE POTOMAC RIVER ESTUARY

As a Supplemental Source of Municipal Water for the Washington Metropolitan Region

By ELLERY R. FOSDICK
Consulting Engineer, National Parks Association

THE POTOMAC RIVER ESTUARY

As a Supplemental Source of Municipal Water for the Washington Metropolitan Region

By Ellery R. Fosdick
Consulting Engineer

NATIONAL PARKS ASSOCIATION
Washington, D.C.
January 1968

1. *Introduction*

A CONTINUING ADEQUATE SUPPLY of municipal water for the Washington Metropolitan Region has been the major objective of water resource planning in the Potomac River Basin for a number of years. This concern for adequacy of the municipal water supply required by the largest concentration of population in the Basin, which also includes the Nation's Capital, is, of course, understandable.

Water resource planning in the past would have resulted in a major expenditure for augmenting the low flow of the Potomac River to dilute pollutants that are present in the stream and its Estuary, rather than in spending primarily to provide more water for municipal purposes in the Washington Metropolitan Region during the short time needed in the summer of years when the flow of the river is low. The need for pollution abatement by low-flow augmentation will, however, be reduced or perhaps eliminated in both the river and its tidal estuary in the foreseeable future under the Federal Water Pollution Control Act.

The adverse effect of the large dams and reservoirs proposed to accomplish low-flow augmentation on the environment of the Basin seems to have been largely ignored, so far, in the planning. The economic feasibility of the dam and reservoir projects proposed for construction has been demonstrated by means of the conventional benefit-cost ratio. In doing this, no allowance has apparently been made for intangible factors such as adverse effects of the projects upon the ecology of the Basin, which may be of equal or greater importance than the economics of the proposals. This procedure is not in accord with the basic environmental goals of man today, as he seeks a quality of environment in which he is in harmony with both neighbors and natural surroundings.

An adequate study is needed of alternate ways of supplying the future municipal water requirements of the Washington Metropolitan Region during occasional low-flow periods; ways which would not have an adverse effect upon the natural environment of the Potomac River Basin. Among these alternatives are the use of water from the Estuary; re-use of waste water; release, when needed, of stored water from small headwater reservoirs; and the transportation of water to the Washington Metropolitan Region from other river basins in the area. One of the alternatives offering good possibilities, reported upon herein, is the use of fresh water held in natural storage by the Potomac River Estuary.

2. *General*

A preliminary study has been made of the technical and economic feasibility of using fresh water (not salt) found in natural storage in the Potomac River Estuary to supply the emergency requirements of the Washington Metropolitan Region (hereinafter called the Region) for municipal water that arise during low flow periods of the river. This study is primarily for the purpose of indicating whether use of water from the Estuary for this purpose has sufficient merit to subsequently justify a complete feasibility study by a Government agency or a firm of consulting engineers.

In this study the maximum use possible has been made of information already available, so as to keep the volume of work at a minimum. Information has been obtained from the United States Geological Survey on the discharge of the Potomac River near Washington, D.C., on diversions from the river, and on the amount of fresh water available in the Estuary. Data on population in the Region has been obtained from the United States Bureau of the Census. Information was obtained from representatives of the various water systems operating in the Region regarding their sources of water, capacities and future requirements. Annual reports were obtained from the District of Columbia Government and Washington Suburban Sanitary Commission for use in preparing this report. Information was also obtained regarding the cost of large water pipe and big pumps from suppliers and from the local electric utility concerning the cost of electric power. A list of reports and other material used in making this study is included herein.

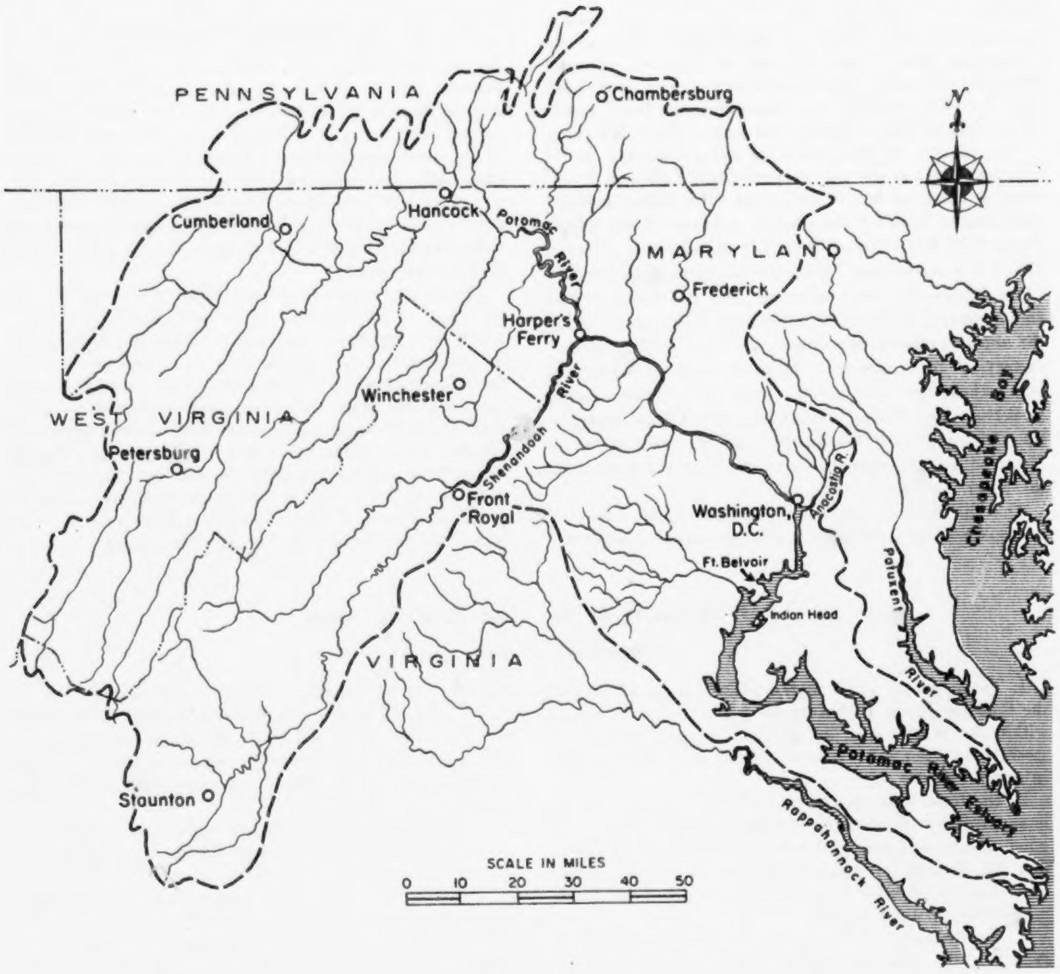
PENNSYLVANIA
Chambersburg
N
Hancock
Potomac River
Cumberland
MARYLAND
Frederick
Harper's Ferry
Winchester
WEST VIRGINIA
Shenandoah River
Petersburg
Front Royal
Washington, D.C.
Anacostia R.
Ft. Belvoir
Indian Head
Patuxent River
Chesapeake Bay
VIRGINIA
Potomac River Estuary
Rappahannock River
Staunton
SCALE IN MILES
0 10 20 30 40 50

Figure 1

Potomac River Basin, Estuary and Adjoining Areas

There seems to be no doubt that the Potomac River Estuary contains an adequate amount of fresh water to supply all of the emergency requirements of the Region for municipal water that will arise during the low flow periods of the river in the period studied herein. The Estuary twists and turns for 117 miles from the head of tidewater at Little Falls near Washington, D.C. to the Chesapeake Bay, as may be seen in Figure 1, opposite. The body of fresh water extends downstream from Little Falls for over 24 miles to a brackish-water front located below Fort Belvoir, Virginia, near Indian Head, Maryland.

The amount of fresh water in natural storage in the Potomac River at low tide between Little Falls and Indian Head is about 13 billion cubic feet (100 billion gallons) according to United States Geological Survey Water Supply Paper 1586-A. In United States Geological Survey Circular 529-A it is stated that "Although the ocean tides reach to Chain Bridge, the ocean salt water does not extend beyond Indian Head." In the same publication it is stated that "In the upper reaches of the estuary the water quality is satisfactory for most uses after standard treatment to sterilize, being about the same as the quality at the Metropolitan intake at Little Falls. Downstream from Chain Bridge to the vicinity of Fort Washington and Mount Vernon, the dissolved oxygen decreases and the bacterial content of the water increases."

The suitability of estuary water for use in municipal water systems of the Region will be discussed subsequently, as will the method of supplying this water to the systems that will need it, and the cost thereof.

The concern of the Region about its municipal water supply does not seem to be wholly justified. The Region lies on both sides of the lower Potomac River which has a relatively large discharge near Washington, D.C., available for municipal water during much of every year. The Region also lies on both sides of the upper part of the Estuary, holding a large amount of fresh water in natural storage that can be used to augment the municipal water supply when the river is low. In reality the concern seems to be more over whether adequate clean, potable water, suitable for municipal use after a minimum of purification treatment, will be available. This is an unrealistic objective, since almost all municipal water used in the United States today must be treated as a large part of it has already been used at least once.

The incongruity is heightened when it is noted that the discharge of the Potomac River near Washington, D.C., which now supplies a major part of the municipal water for the Region, will continue to be more than adequate for the municipal water requirements at all times for many years into the future under the worst drought recorded to date, except for a period of about three months during the summer when additional water will be needed. The incongruity is further magnified by the fact that the fresh water in natural storage in the Estuary is largely composed of the same kind of water which is now used for a major part of the municipal water supply of the region.

3. Summary of the Most Pertinent Facts Contained in this Report

1. The upper 24 miles of the 117-mile-long Estuary of the Potomac River, a considerable part of which is located within the Washington Metropolitan Region, contains all fresh water (not salt) with over 100 billion gallons held in natural storage.

2. The fresh water in the upper Estuary, most of which is supplied by the discharge of the Potomac River, is of good quality, and part of it is now diverted near Washington, D.C. before it reaches the Estuary to supply a major portion of the municipal water requirements of the Washington Metropolitan Region.

3. The discharge of the Potomac River into the Estuary is sufficiently large during every year so that the upper Estuary is thoroughly flushed several times.

4. The quality of the Potomac River water after it reaches the upper Estuary is lowered because of pollutants entering from the Washington Metropolitan Region, chiefly from the Blue Plains Waste Water Treatment Plant of the District of Columbia.

5. The pollution entering the upper Estuary will have to be reduced under the Federal Water Pollution Control Act, and steps are now being taken to accomplish this by improving the treatment of waste waters, chiefly by well-known conventional processes. Studies are also under way to determine how best to eliminate pollution from storm waters, boats and ships, and dredging operations. An improvement in the quality of the water in the upper Estuary will have a beneficial effect upon the ecology of the Washington Metropolitan Region.

6. The maximum demand for municipal water in the Washington Metropolitan Region will increase over 3 times, from 0.5 billion gallons a day in 1970 to 1.6 billion gallons a day by the year 2010, the latest year studied, as will the annual requirement for water because of the expected growth in population and greater per capita usage of water.

7. A major portion of the municipal water requirement of the Washington Metropolitan Region must continue to be supplied from the Potomac River, as no other source is available, and additional amounts needed in the future, in excess of the unregulated flow of the river during occasional low-flow periods, could be supplied from the fresh water in natural storage in the upper Estuary. This would eliminate need for regulation of the river by large dams and reservoirs for municipal water supply.

8. The 100 billion gallons of fresh water in the Estuary is more than adequate to meet the forecast net requirement of 38.7 billion gallons for supplemental water during the low-flow months of July and August, under low-flow conditions if they occur in the year 2010. Smaller quantities of supplemental water would be required in prior years in the low-flow season, if low-flow conditions occur starting soon after 1970 and continue thereafter.

9. The need for supplemental water is highly variable and uncertain based upon past experience, there being only a 9 percent probability that such water will be needed in the year 2010. It is likely that no supplemental water at all will be needed in 27 of the 40 years from 1970 to 2010. This makes it difficult to justify a large expenditure to supply water for this purpose.

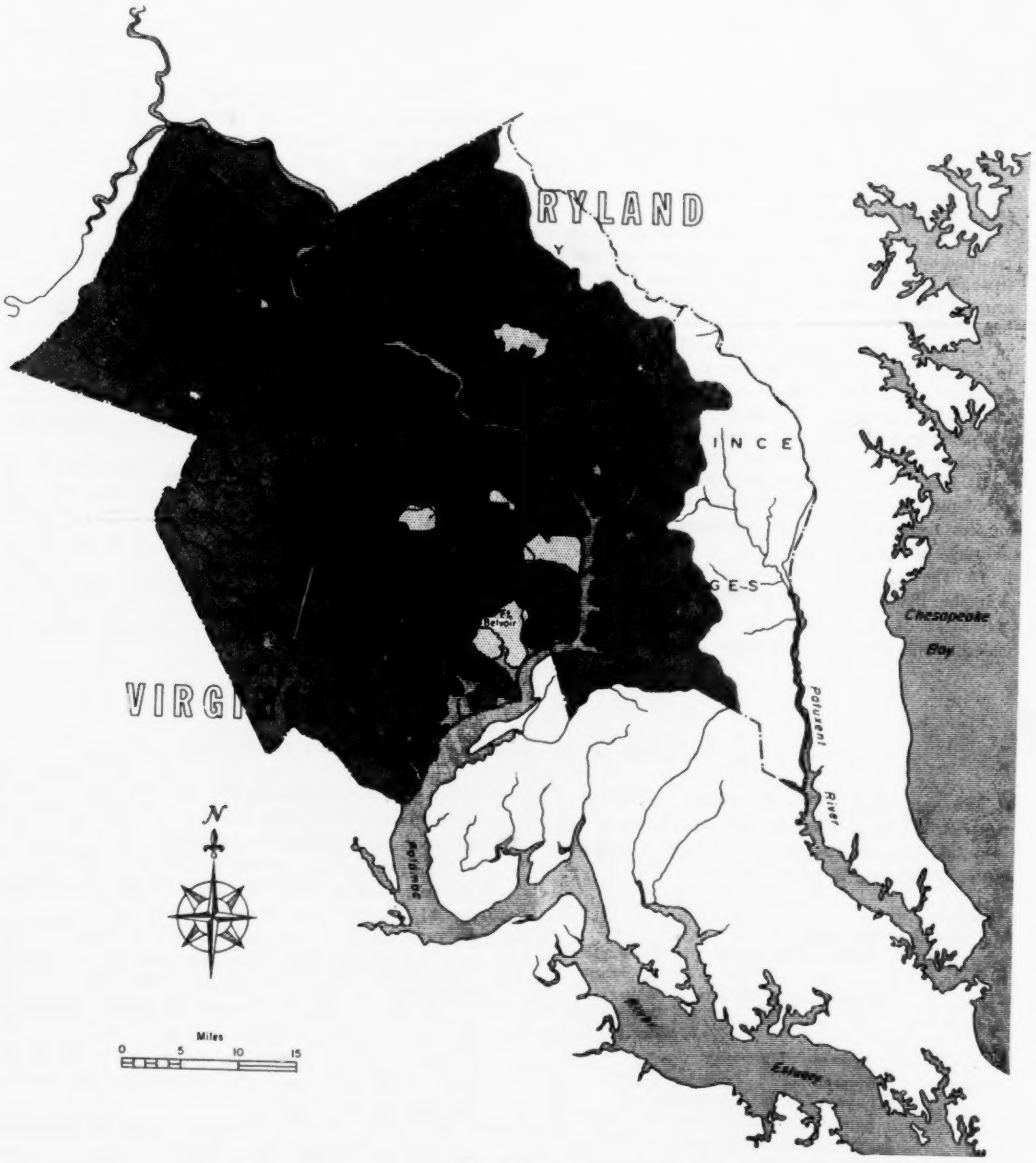
RYLAND
Y
INCE
GE-S
VIRGI
Ft. Belvoir
Chesapeake Bay
Patuxent River
Potomac
River
Estuary
N
Miles
0 5 10 15

Figure 2.
WASHINGTON METROPOLITAN REGION

10. Supplemental water will in the future be needed from the upper Estuary by the Washington Aqueduct water collection and treatment system if the Potomac River remains unregulated. This system supplies a major part of the municipal water used in the Washington Metropolitan Region, all of which is distributed by other systems. Supplemental water from the Estuary will also be needed by the Washington Suburban Sanitary Commission operating in Montgomery and Prince George's Counties in Maryland, and by the City of Alexandria, Virginia.

11. Supplemental water would be taken from the upper Estuary by each of these agencies needing it using pumping plants located at suitable places.

12. The pumping plant for the Washington Aqueduct is reported upon herein as it would be an added expense since it would be constructed only if the Potomac River remains unregulated. A pumping plant for the Washington Suburban Sanitary Commission would have to be constructed in any event, either on the Estuary, if the river remains unregulated, or on the Potomac River if the river is regulated. If the City of Alexandria does not get additional water from a pumping plant on the upper Estuary, it will probably have to spend an equivalent amount in making arrangements to get water from some other source.

13. The pumping plant on the Estuary for the Washington Aqueduct should be put into operation by about 1970, or soon thereafter, as low-cost insurance against a possible shortage of municipal water.

14. The initial capacity of the Washington Aqueduct Pumping Plant should be 400 million gallons a day to take advantage of lower costs with large size, although this capacity will not be fully used for over 20 years; at that time an additional 400 million gallons a day of capacity should be installed. This capacity allows for a minimum flow from Great Falls to the Estuary of 100 million gallons a day, the all-time minimum flow that occurred over Little Falls in 1966. This flow down the river channel is considered necessary to avoid an adverse effect upon the ecology of the area.

15. The cost to construct Phase 1 of the pumping plant of the Washington Aqueduct with a capacity of 400 million gallons a day is estimated at $4.7 million. The cost to construct Phase 2, with an additional 400 million gallons a day of capacity, is $4.0 million. This is but a fraction of the cost of $393.3 million (1962 prices) for the 16 major dams and reservoirs that had been proposed to regulate the flow of the Potomac River, with their adverse effect upon the ecology of the Potomac River Basin.

16. The total annual cost for the pumping plant of the Washington Aqueduct in low-water years will increase from $379 thousand in 1970 and 1980 to $544 thousand by 2010, as the amount of electric power used for pumping becomes greater. This is but a fraction of the $20.8 million average annual cost for the 16 major dams and reservoirs that have been proposed.

17. The brackish-water front in the upper Estuary will not move upstream when water is pumped from the upper Estuary for municipal use, because the volume of waste water returned will be greater. This is so because the waste water includes a major portion of the water pumped from the Estuary, together with water imported into the Potomac River Basin from the Patuxent River Basin and a relatively small amount of water from other sources.

4. Areas Included in the Washington Metropolitan Region

The areas included in the Region, consisting of the District of Columbia and its environs, shown in Figure 2 opposite, are listed below and the agency supplying the water is indicated in each case.

District of
Columbia — Municipal (a)
Maryland — Montgomery County } Washington
Prince George's County } Suburban Sanitary Commission Partly from (a)
Rockville—Municipal
Virginia — Alexandria } Fairfax Water
Fairfax County } Authority
Fairfax City—Municipal
Falls Church—Municipal (a)
Arlington County—Arlington County (a)
Leesburg—Municipal
Loudoun County—Partly from (b)
Prince William County—Partly from (b)

The method of supplying the municipal water requirements to each of the water systems in the Region—but not its distribution to individual customers—has been studied. A description of the present sources of supply for each agency providing water, and the plans for future expansion of these facilities, are given below.

The ***Washington Aqueduct,*** which gets all of its water from the Potomac River, treats this water at the Dalecarlia and McMillan Filter Plants before it is delivered to the District of Columbia Department of Sanitary Engineering for distribution to customers. Water is taken from the Potomac River at Great Falls and at Little Falls, located about 9 river miles and 1 mile, respectively, upstream from the District of Columbia.

Water flows by gravity from the intake at Great Falls through two conduits with a combined capacity of about 233 million gallons a day (mgd) to the Dalecarlia Filter Plant in Northwest Washington, from whence part of it is piped to the McMillan Filter Plant located near the center of the District of Columbia. Water taken at Little Falls is pumped by the Little Falls Pumping Plant, with a capacity of 450 mgd, to the Dalecarlia Filter Plant a short distance away. In addition, a hydroelectric station can be operated in emergencies to pump 120 mgd of water from the C & O

(a) Water supplied at wholesale by the Washington Aqueduct.

(b) Water supply by small municipal and individual water systems.

Canal at a point 1 mile downstream from Little Falls to the Dalecarlia Filter Plant.

Additional water required by the Washington Aqueduct in the future will have to be supplied from the Potomac River or its Estuary, as there is no other source of water readily available.

The *Washington Suburban Sanitary Commission*, which supplies water to Montgomery and Prince George's Counties in Maryland, obtains its water from the Patuxent River, Potomac River, from several wells located in Prince George's County, and from the Washington Aqueduct. Patuxent River water is stored for delayed use in the Triadelphia and Rocky Gorge reservoirs with a total capacity of 14 billion gallons (bg). Water from the Patuxent River is pumped by a pumping plant with a capacity of 65 mgd located at Rocky Gorge to a filter plant near Laurel, Maryland.

Potomac River water is pumped from the river by a pumping plant with a capacity of 70 mgd located on the bank of the Potomac River near the point at which Watts Branch empties into the river about 7 miles above Great Falls. This water is treated at a filter plant located near the pumping plant. There is no provision for storing water in the Potomac River at this point for delayed delivery to the pumping plant.

Additional water required by the Washington Suburban Sanitary Commission in the future will have to be supplied from the Potomac River or its Estuary, as there is no other source of water readily available.

The *Rockville, Maryland, Municipal Water System* gets all its water from the Potomac River by means of a pumping plant with a capacity of 8 mgd, located on the bank of the Potomac River near the point at which Watts Branch empties into the river. The water is treated at a filter plant located near Rockville, Maryland, about 6 miles from the Potomac River.

Additional water required by Rockville in the future will have to be supplied from the Potomac River or obtained from the Washington Suburban Sanitary Commission, which supplies water to the surrounding areas, as there is no other source of water readily available.

The *Fairfax County, Virginia, Water Authority* supplies water to small groups of customers in the county that would not otherwise be served, and operates the water system in the City of Alexandria. The communities of Falls Church, Vienna, and Fairfax City, located in the county, each has its own water system.

The authority purchases all of its water from Falls Church and Vienna and the Alexandria Water System except for about 15 percent that is obtained from wells.

Additional water required will probably continue to be obtained from these same sources unless it is purchased directly from the Washington Aqueduct as no other source of water is readily available.

The *Community of Falls Church* gets all of its water from the Washington Aqueduct. Additional water required in the future will probably also have to be obtained from the Washington Aqueduct.

The *Alexandria City Water System* gets its water from Occoquan Creek. Two pipelines with a combined capacity of about 150 mgd bring water from a 10 bg reservoir on Occoquan Creek to the city. The capacity of the reservoir can be increased to about 13 bg by raising the dam 5 feet. This would make it possible to supply the requirements of the city to about the year 2000.

Additional water required in the future by the City of Alexandria over that available from Occoquan Creek will probably have to be supplied from the Potomac River or its Estuary either directly or by purchasing it from an agency that gets water from these sources as there is no other source of water readily available. The nearest other large source of water is in the Rappahannock River located about 50 miles to the southwest.

The *Fairfax City, Virginia, Municipal Water System* gets all of its water from Goose Creek by means of a 22-mile pipeline from a reservoir with a capacity of 350 million gallons (mg). The water is treated in a plant located at Goose Creek.

Additional water required in the future by Fairfax City will be obtained by constructing a new dam and reservoir on a tributary of Goose Creek with a storage capacity of 2.5 bg, that will supply the requirements beyond the year 2010. The construction of this reservoir will not materially reduce the low flow of the Potomac River into which Goose Creek discharges at a point several miles above Great Falls, as most of the water will, during the low-flow period, be supplied to Fairfax City from the reservoir, since the flow of Goose Creek at that time will be quite low.

Arlington County, Virginia, gets all its municipal water from the Washington Aqueduct.

Additional water required in the future by Arlington County will have to be supplied by the Potomac River or its Estuary, as there is no other source of water readily available. This water will probably continue to be obtained from the Washington Aqueduct.

The *City of Leesburg, Virginia, Municipal Water System* gets all its water from wells and a spring. These have a maximum combined capacity of about 1.5 mgd.

Additional water required in the future by the City of Leesburg will have to be obtained from the Potomac River 3 miles away, as there is no other source of water readily available.

The portions of *Loudoun* and *Prince William Counties, Virginia*, that are located in the Region are presently supplied with water by small municipal and individual water systems.

Additional water required in the future by the increased population, after water systems start serving the area, will have to be obtained directly from the Potomac River or its Estuary, or indirectly by purchasing water from an agency that gets its water from those same sources, as there is no other source of water readily available. The nearest other large source of water is in the Rappahannock River Basin, located about 50 miles to the south.

5. Future Requirements for Municipal Water in the Washington Metropolitan Region

The average and maximum daily requirement for municipal water in the Region has been determined for 1970 and for each tenth year thereafter through the year 2010. These are as follows:

	Millions of Gallons	
Year	Average Day	Maximum Day
1970	338	483
1980	477	675
1990	674	902
2000	947	1,211
2010	1,282	1,616

The forecast of the average daily requirement has been computed from forecasts of population to be served water, and the expected average per capita use of water. The average daily requirement is needed to determine the total forecast annual and monthly requirements, in order to arrive at the amount of water needed in excess of the ultimate capacity of existing sources. This excess can be supplied from water found in the Estuary.

The forecast of the maximum daily use of water has been computed from the average daily requirements. The maximum daily use has been forecast for use in determining the amount of pumping capacity, in excess of the ultimate capacity of existing sources, which must be installed to take water from the Estuary.

The forecasts have been made starting with the actual population served, and its usage of water in 1966, in the areas supplied by the Washington Aqueduct, Washington Suburban Sanitary Commission, Alexandria, Leesburg, Fairfax City, and Rockville. The usage of water by the other areas was estimated from population and other information. This was considered to be satisfactory for the purpose of this report, since the other areas used only 4 percent of the water required by the Region in 1966, and they will take only 1 percent by the year 2010.

An increase of 2⅛ percent a year in the population in the Region to be served water in the future, used in making this forecast, is slightly less than the 2¼ percent increase experienced during the 5 years from 1960 through 1965, as this rapid rate of increase is not expected to continue far into the future. The rate of increase used in making the forecast is, however, considerably higher than the rate of about 1½ percent for the entire United States, and reflects the rapid growth in population that is expected in the Region in the future, particularly in areas outside the District of Columbia.

An increase in the average daily per capita use of water of 1½ percent per year has been used in making this forecast. This is the rate at which usage in the areas outside the District of Columbia has been increasing since 1958. It reflects the change in character of these areas that has occurred and is expected to continue as the suburban and urban population increases. The average daily per capita usage of water has, however, been limited to a maximum of 250 gallons, as it is expected to level at or below this amount.

The average daily per capita usage of water used in the forecast is considered to be the maximum that can be expected. This usage could probably be reduced by initiating measures for the conservation of water. These measures might include, but need not be limited to, the recycling of soapy water from automatic washers, installation of toilets which use less water or no water at all, greater use of showers for personal bathing, reduction in the leakage from water systems, and the establishment of regressive-type rate schedules for water that will discourage waste by consumers.

The maximum daily use of water per capita in the Region as a whole has been gradually increased in the forecast from 184 gallons actually used in 1966 to 280 gallons in the year 2010. This increase follows the increase in the average daily per capita usage, but at a declining rate and reflects the change in use that is expected to accompany the changing character of the Region.

6. Requirements for Municipal Water from the Potomac River and Its Estuary

The amount of water needed for municipal use that will have to be taken from the Potomac River and its Estuary and supplied by other sources to meet the requirements of the Region on the maximum day in 1970 and for each tenth year thereafter through the year 2010 has been determined as follows:

Year	Millions of Gallons Per Day Potomac River & Estuary	Other Sources	Total
1970	343	140	483
1980	512	163	675
1990	710	192	902
2000	981	230	1,211
2010	1,364	252	1,616

The other sources of water referred to above are the Patuxent River, Occoquan Creek Storage, Goose Creek Storage, and other small streams and wells. These sources would supply 29 percent of the requirements on a maximum day in 1970 and 16 percent in 2010. The amount of water that would be supplied from each source in each of the years studied is shown in Table 1.

Table 1

DEMAND FOR MUNICIPAL WATER IN THE WASHINGTON METROPOLITAN REGION ON THE MAXIMUM DAY

1970-2010 Inclusive

	Million Gallons Per Day				
	1970	1980	1990	2000	2010
Potomac River and Estuary					
Washington Aqueduct	286	356	455	608	807
Washington Suburban Sanitary Commission	57	148	243	357	498
City of Alexandria	—	—	—	—	36
City of Rockville	4.6	8	11	15	21
City of Leesburg	—	—	0.5	1.3	2.3
Total	347.6	512.0	709.5	981.3	1364.3
Other Sources					
Patuxtent River	65	65	65	65	65
Wells in Prince George's County	15	15	15	15	15
Occoquan Creek	51	72	98	132	150
Goose Creek	4.5	6	9	12	16
Wells & Springs at Leesburg	0.8	1.4	1.5	1.5	1.5
Misc. Wells & Streams	4.0	4.0	4.0	4.0	4.0
Total	140.3	163.4	192.5	229.5	251.5
TOTAL	487.9	675.4	902.0	1210.8	1615.8

The maximum amount of water that must be supplied by the Potomac River and by its Estuary under low-flow conditions can be diverted by gravity flow and pumping from the river above Great Falls, by pumping at Little Falls, and by pumping from the Estuary below Little Falls. These amounts are shown below for the maximum day in each of the years studied.

Year	Diversion in Millions of Gallons Per Day Above Great Falls	At Little Falls	From Estuary	Total
1970	290	53	—	343
1980	290	—	222	512
1990	290	—	420	710
2000	290	—	691	981
2010	290	—	1,074	1,364

The amounts of water shown above are based upon the assumption that the maximum day occurs on the day of the lowest discharge of record for the river near Washingtong, D.C., which was 390 mgd on September 10, 1966. The occurrence of these two events on the same day represents the most adverse conditions that might affect water supply for the Region and this does not appear probable, as the two usually occur at different times at the low-flow season. Also, the probability of a discharge as low as 390 mgd occurring near Washington, D.C., is not high. Based upon past experience this may on the average be expected to occur in the future about once in 15 years.

The amount of water available above Great Falls for municipal water supply has been reduced by 100 mgd in the years 1970 through 2010 to make this available for flow down the river from Great Falls to Little Falls. This was the minimum flow over Little Falls during the drought in 1966, and has been used here as an amount that might be acceptable. At Little Falls about 20 mgd of this water will be diverted to the C & O Canal and the rest will flow over Little Falls into the Estuary.

The flow from Great Falls to Little Falls and over Little Falls to the Estuary is considered to be necessary for esthetic reasons and to maintain the flow required for the benefit of aquatic life. The flow through the C & O Canal, all of which discharges into the Estuary, is necessary for esthetic reasons, for recreational purposes and to supply water to the hydroelectric generating plant and a direct-drive water wheel of the Wilkins-Rogers Milling Company, Inc., located in Georgetown in the District of Columbia. The water supply to the Wilkins-Rogers Milling Company, Inc., can probably be interrupted in future emergencies as it has in the past, in which case only about 2 mgd would be required for the C & O Canal.

The amount of water to be diverted at Little Falls, shown in the above table, is only that which is available from the discharge of the river in excess of the diversions to be made above Great Falls, and the 100 mgd diverted to the C & O Canal and flowing over Little Falls. It does not include water pumped from the Estuary to Little Falls for municipal water supply that must also be pumped by the Little Falls plant to the Dalecarlia Filter Plant.

Some of the water shown in the above table must be pumped from the Estuary, starting before 1980, for the Washington Aqueduct, for the Washington Suburban Sanitary Commission before the year 2000, and for the City of Alexandria before 2010. The amount required for each of these, for the maximum day in the years studied, is as follows:

	Millions of Gallons Per Day			
Year	Washington Aqueduct	Washington Suburban Sanitary Commission	City of Alexandria	Total
1970	—	—	—	—
1980	222	—	—	222
1990	420	—	—	420
2000	608	83	—	691
2010	807	231	36	1,074

7. Pumping Plants Required To Take Water from the Potomac River Estuary for Municipal Water Supply

A study has been made of the type, size, location and cost of the pumping plant that will be needed by the Washington Aqueduct to take water from the Estuary in the future. The pumping plants needed by the Washington Suburban Sanitary Commission and the City of Alexandria for taking water from the Estuary have not been studied, as these would be a part of the normal water system development of these agencies even if large dams and reservoirs are constructed on the Potomac River. The pumping plant for the Washington Aqueduct would, however, be constructed in lieu of the large dams and reservoirs.

The pumping plant located on the Estuary that would be needed to supply the emergency requirements of the Washington Aqueduct (hereinafter called the Palisades Pumping Plant) should, if practicable, be ready for initial operation by about the year 1970, although it probably would not have to pump any appreciable amount of water in that year under the most adverse conditions which might occur. It should be able to pump increasing amounts thereafter up to 807 mgd by the year 2010. The need for reserve pumping capacity in this pumping plant is questionable, and none is proposed herein. The probability of an extremely low discharge of the Potomac River, to place a maximum demand on the pumping plant, is not high, and when this condition does occur it will last only a relatively short time. In addition, the reliability of pumping units of the type subsequently suggested for this plant is inherently high, and the large amount of time when they will not operate will be more than sufficient for performing adequate preventive maintenance.

The capacity in the Palisades Pumping Plant should probably be installed in four units, which could be constructed in two phases of two units each to meet the requirements as they increase. Installation of these units should be as follows:

Phase 1—1970 Units 1 and 2 of 200 mgd each
Phase 2—1990 Units 3 and 4 of 200 mgd each

The Palisades Pumping Plant should probably be located on land now owned by the Federal Government between the C & O Canal and the Potomac River about 13,000 feet downstream from the Little Falls Pumping Plant in the vicinity of Fletchers Boat House, as shown in the plate on the outside back cover. This is a section of the river commonly called the Potomac Palisades. There appears to be sufficient space for the pumping plant at this location, and the Potomac River Channel starts to widen and deepen here, making it suitable for a forebay. The elevation of the water in the forebay at Little Falls Pumping Plant to where water from the Estuary would be pumped is only about 40 feet above the mean low water elevation of the surface of the river at the proposed Palisades Pumping Plant. This is a relatively low head against which to pump water, and the cost for electric energy should be comparatively small.

One pressure pipe with a 9-foot inside diameter, running 13,000 feet from the Palisades Pumping Plant to the forebay at Little Falls Pumping Plant, would be installed for each pair of pumping units. The two pipes would be buried in trenches located between the low-water bank of the Potomac River and the C & O Canal, on land now owned by the Federal Government in an area that is only under water during a high discharge of the river.

This is a convenient location for the construction of the Palisades Pumping Plant and associated pipelines, as the area is readily accessible for the transportation of construction materials. No access road or railroad would have to be constructed. A road now runs along the river side of the C & O Canal the entire distance from the Palisades Pumping Plant Site to the Little Falls Pumping Plant, and a branch line of the Baltimore and Ohio Railroad located between the road and the river, runs by the pumping plant site and upstream for a half-mile before crossing the canal.

The pumping units would be of the electrically-driven turbine or propeller type, each requiring about 2000 kva of power at full load. The plant would be fully automatic and remotely controlled from either the Little Falls Pumping Plant or the Dalecarlia Filter Plant.

The construction cost of the Palisades Pumping Plant is estimated to be as follows:

	Cost in Thousands of Dollars		
	Phase 1	Phase 2	Total
Pumping units, accessory electrical and mechanical equipment, and substation	$1,210	$1,210	$2,420
Intake and building	1,400	700	2,100
Pipeline	2,090	2,090	4,180
Total	$4,700	$4,000	$8,700

These construction costs are based upon prices as of December, 1967. They do not include an allowance for the effects of future inflation or the escalation of wage rates.

The $8.7 million cost of constructing the Palisades Pumping Plant will be but a fraction of the cost of $393 million (1962 prices) that would be required to construct the 16 large dams and reservoirs that have been proposed to augment the low flow of the Potomac River. The construction cost of the Palisades Pumping Plant will also be considerably less than the $58 million portion of the cost of the 16 large dams and reservoirs that has been allocated to water supply, most of which is for the benefit of the Region.

The $8.7 million cost of constructing the Palisades Pumping Plant will also be much less than the cost of $77.3 million (1967 prices) that would be required to construct the Bloomington dam and reservoir, primarily for the benefit of the Region's water supply. This is the first of the 16 projects proposed for construction. The $8.7 million construction cost for the Palisades Pumping Plant appears more favorable still when compared with the cost of the Bloomington dam and reservoir together with an additional $32.8 million (1962 costs) construction cost for the Little Cacapon, Sideling Hill Creek and Town Creek dam and reservoir projects, proposed by the Department of the Interior in its Interim Report on the Potomac River Basin.

The Palisades Pumping Plant could be constructed in the relatively short time of about 18 months; possibly less, if required by an emergency. The equipment that would be used is of a conventional type that should be readily available; but smaller pumping units could be used in an emergency if they could be supplied in a shorter time. The project is relatively small, so that the work should not pose the difficulties frequently encountered in the construction of large dams and reservoirs which usually require between 3 to 5 years to construct.

The Washington Suburban Sanitary Commission will need by the year 2010 a pumping capacity of 428 mgd in addition to the 70 mgd now installed at its Potomac River Pumping Plant, in order to supply the requirements of the maximum day. A maximum of 267 mgd is all that could be supplied from the Potomac River Plant if there were no low-flow augmentation in order to leave 100 mgd in the river channel. The remaining 231 mgd would have to be supplied from the Estuary. However, if there were low-flow augmentation the entire 498 mgd could be taken at the Potomac River Pumping Plant. In either case pumping capacity will have to be installed to supply the 231 mgd. Installing pumping capacity on the Estuary instead of at the Potomac River Pumping Plant will probably eliminate the future need for a dam across the river to provide a forebay for the Potomac River Pumping Plant. Such a dam and forebay would have an adverse ecological effect upon this area.

The installation of pumping capacity on the Estuary by the Washington Suburban Sanitary Commission appears to have merit in view of the rapidly increasing demand for water in the nearby Prince George's County area, which it could supply. The pumping plant could be located near the Estuary in Prince George's County so as to deliver water directly to the water mains in the county after treatment, instead of transporting water to the area by pipeline some 40 to 45 miles from the Potomac River Pumping Plant, as is now done. It might be desirable to operate this pumping plant to a certain extent all of the time once it is constructed. This would pose no particular problem, as the Potomac River would discharge more water into the Estuary than would be taken out by all the pumping plants even in a dry year in all but the summer months, and during an occasional short period in the autumn, as subsequently discussed.

A pumping plant on the Estuary for the Washington Suburban Sanitary Commission could be put underground if desired, to avoid an adverse effect upon the appearance of the riverbank; it could be controlled remotely so that no operators would be required. The treatment plant for the water could be located away from the river at a suitable place, where it would not be objectionable with appropriate architecture and landscaping.

The Alexandria water system, operated by the Fairfax Water Authority, will by 2010 need—in addition to the water available from Occoquan Creek—pumping capacity that could take about 36 mgd from the Estuary in order to supply the requirements of the maximum day, unless arrangements are made to obtain water indirectly from the Estuary. Fairfax County has considerable frontage on the Estuary, so it should be possible to find a suitable location for a pumping plant.

8. *The Cost of Pumping Water from the Potomac River Estuary for the Washington Aqueduct*

The major cost in connection with the Palisades Pumping Plant of the Washington Aqueduct will be the fixed costs. The cost of maintenance and electric power will be relatively low, as the plant will not be operated much of the time even when the amount of water supplied to consumers has increased substantially. These costs are shown in Table 2 separately for pumping for the Washington Aqueduct, and pumping to permit maintaining a minimum flow of 100 mgd in the river for water years which correspond approximately with each of the years studied, under low-flow conditions on the Potomac River.

The annual cost of the Palisades Pumping Plant even when pumping water to maintain a minimum flow in the river as shown in Table 2, is but a fraction of the average annual cost of $20.8 million (1962 costs) for the 16 large dams and reservoirs that have been proposed.

The cost of pumping water from the Estuary by the Palisades Pumping Plant has been determined for water

Table 2
ANNUAL COST FOR PALISADES PUMPING PLANT
1970-2010 Inclusive
Thousands of Dollars

	Water Year				
	1970	1980	1990	2000	2010
Maintenance					
Basic Requirements	$ 32	$ 32	$ 62	$ 62	$ 62
Minimum Flow Maintenance	8	8	8	8	8
Total	40	40	70	70	70
Electric Power					
Basic Requirements	2	2	16	38	102
Minimum Flow Maintenance	—	—	11	14	35
Total	2	2	27	52	137
Fixed Costs					
Basic Requirements	270	270	270	270	270
Minimum Flow Maintenance	67	67	67	67	67
Total	337	337	337	337	337
Total Cost					
Basic Requirements	304	304	348	370	434
Minimum Flow Maintenance	75	75	86	89	110
TOTAL	$379	$379	$434	$459	$544

years running from October 1, which is normally about the time higher water begins to be available each year, through September 30 at the end of the following dry season. A water year is considered to be desirable rather than a calendar year which would include the months of October, November, and December, at the beginning of the wet season for the succeeding year.

Operating costs for this plant will be small and consist chiefly of maintenance expense as it will be an automatic plant remotely controlled by the present operators from the Dalecarlia Filter Plant or the Little Falls Pumping Plant.

Electric power will be purchased from the Potomac Electric Power Company under the LP rate schedule, applicable to large loads.

The fixed costs consist of a uniform annual amount for the depreciation of plant, interest at 3⅛ percent a year on the depreciated investment, and replacements over the 45-year service life of the pumping plant, and administrative general expenses.

The amount of energy used by the Palisades Pumping Plant in pumping municipal water from the Estuary and to replace the water flowing over Little Falls in the water years studied, under low-flow conditions resulting in the maximum use of energy, the number of days the pumps would be operated and the amount of water to be pumped, are shown in Table 3.

Table 3

ELECTRIC ENERGY REQUIRED, DAYS OPERATED AND QUANTITY OF WATER TO BE PUMPED BY THE PALISADES PUMPING PLANT

	MWH Energy Required	No. Days Operated	bg Pumped
1970			
Basic Requirements	Nil	Nil	Nil
Minimum Flow Maintenance	Nil	Nil	Nil
Total	Nil	Nil	Nil
1980			
Basic Requirements	Nil	Nil	Nil
Minimum Flow Maintenance	Nil	Nil	Nil
Total	Nil	Nil	Nil
1990			
Basic Requirements	1,040	41	4.9
Minimum Flow Maintenance	1,088	52	5.2
Total	2,128	52	10.1
2000			
Basic Requirements	3,042	62	14.5
Minimum Flow Maintenance	1,553	74	7.4
Total	4,595	74	21.9
2010			
Basic Requirements	9,668	122	46.0
Minimum Flow Maintenance	3,423	163	16.3
Total	13,091	163	62.3

The daily virgin discharge of the Potomac River near Washington, D.C., for the 1965-66 water year, which includes the lowest flow of record, is shown in Figure 3 on page 12, compared with the actual total diversion for municipal water and the C & O Canal in that period, and with the estimated diversions for municipal water only in the water year 2010. The water year 2010 has been used in Figure 3 because the diversion in this year is the maximum in the period studied, and it appears that the method of supplying this diversion can be used to the extent needed to supply the smaller diversions in prior years.

The diversions in the water year 2010 have been distributed in the same monthly proportion as the diversions actually made in the years 1965-66. The average daily diversion in each month for the year 2010 has been used in Figure 4, without showing the diversion for each day. This procedure is considered adequate to indicate the approximate total volume of water that must be pumped. The volume of water required for municipal use that must be pumped from the Estuary is indicated by the shaded areas on Figure 4. The water that must be pumped from the Estuary has been apportioned among the agencies which will do the pumping in proportion to their forecast maximum daily demand for water.

The Palisades Pumping Plant will be needed chiefly in years of low water and will not be used in median and high water years with the exception of a few days in some of these years. As a result the cost of electric power in these years will be chiefly the monthly minimum charge of $154, and the cost of maintenance will be somewhat less than the amounts previously shown.

The limited extent to which the Palisades Pumping Plant will be required to operate may be judged from a determination of the amount it would be operated if the future discharge of the Potomac River near Washington, D.C., is similar to the actual discharge during the last 37 years. On this basis the probability of the Palisades Pumping Plant being operated to assist in supplying the forecast municipal water requirements of the Region, while maintaining a minimum flow of 100 mgd from Great Falls to the Estuary in each of the years studied, is as follows:

Water Year	% Probability of operating
1970	0.0
1980	0.1
1990	1.2
2000	3.4
2010	9.4

In considering the desirability of constructing the Palisades Pumping Plant it is significant to note that it will not operate to an appreciable extent until after the end of this century. The Pumping Plant will probably not be operated at all in 27 of the 40 years from 1970 to 2010, but it will provide low-cost insurance against a possible shortage of municipal water in the Region in an occasional year for a short period of time. The potential need for supplemental water is so small for the foreseeable future that it is difficult to justify the expenditure of the large amount of public funds for the 16 dams and reservoirs that have been proposed heretofor when the Palisades Pumping Plant can supply all the water needed at a fraction of the cost.

To maintain a flow of 100 mgd in the Potomac River from Great Falls to the Estuary under low-flow conditions, the Washington Suburban Sanitary Commission and the Washington Aqueduct must permit this volume of water to bypass the intakes to their pumping plants. This probably would not increase the cost of pumping by the Washington Suburban Sanitary Commission, since the pumping would be done in an estuarial pumping plant instead of the Potomac River Plant. The Washington Aqueduct would, however, have to pump an additional 100 mgd from the Estuary to the intake of the Little Falls Pumping

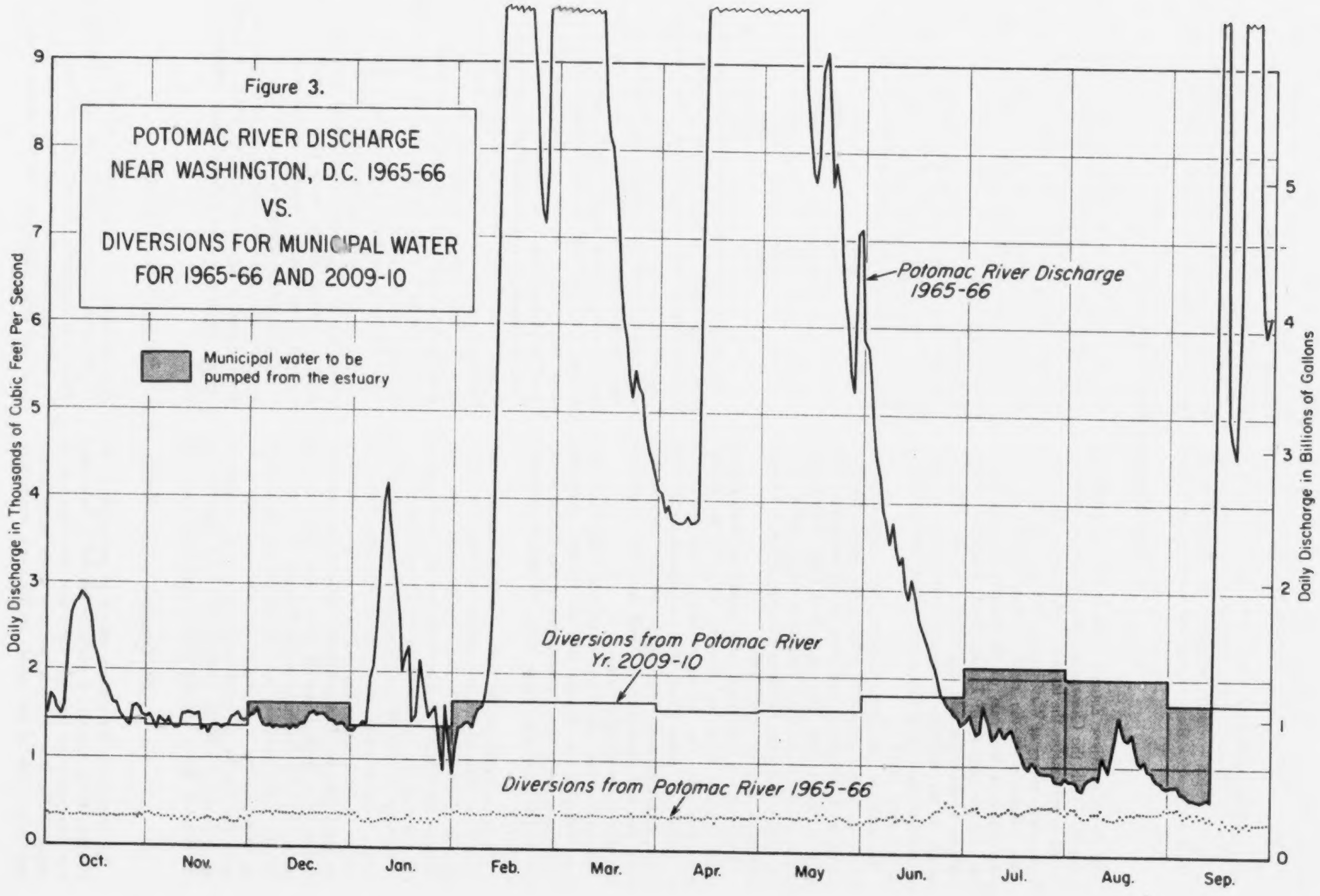

Figure 3.

POTOMAC RIVER DISCHARGE NEAR WASHINGTON, D.C. 1965-66 VS. DIVERSIONS FOR MUNICIPAL WATER FOR 1965-66 AND 2009-10

Plant at costs shown in Table 2. The number of days of pumping, as shown in Table 3, would also increase somewhat.

The pumping cost which would stem from maintenance of a flow of 100 mgd in the Potomac River from Great Falls to the Estuary should, it appears, be allocated to all of the water systems that are supplied water by the Washington Aqueduct, in proportion to the quantity of water taken. This is appropriate, since the need for pumping 100 mgd from the Estuary is the result of their usage of Potomac River water.

The possibility of producing hydroelectric energy from these units at times when they are not needed for pumping has been investigated and found to be uneconomic.

9. The Potomac River Estuary

The Potomac River Estuary extends for 117 miles to its junction with the Chesapeake Bay. Water is added to it by many tributaries, the largest of which is the Anacostia River, which enters at Washington. The total contribution of the tributaries in the reach of most interest in this study, which is that part of the Estuary between Little Falls and the vicinity of Indian Head, Maryland, is not sufficient however to add appreciably to the water in storage in the Estuary, as their drainage area is only 4 percent of the total drainage area of the Potomac River above Indian Head.

The width of the Estuary varies from a few hundred feet at the head to almost 6 miles at the mouth. Shallow depths are found throughout most of the estuarine reach except in the channel. The reach from Little Falls downstream 2½ miles to Three Sisters, in which section it is proposed to locate the Palisades Pumping Plant, is by contrast fairly deep in most places.

The Estuary is a drowned valley where the fresh waters of the Potomac River and the salty waters of the Chesapeake Bay mix. This mixing extends up the Estuary to the vicinity of Indian Head, where a brackish-water front exists. Although some salty water intrudes beyond this front, the chloride content is within the limits considered desirable for municipal water.

The ocean tides which reach to Little Falls, where the river makes its last descent over the fall-line rocks into the Estuary, are a major contributor to the mixing of the waters. The mean tidal range in the Washington Channel is 2.9 feet.

The upper reach of the Estuary, which contains fresh water, is a relatively narrow section extending for a distance of about 24 miles to the brackish-water front. The width of the Estuary in this reach does not exceed about 1¾ miles, as may be seen in the back-cover illustration.

The total volume of water discharged by the Potomac River in every water year exceeds by many times the 100 bg of fresh water that is held in natural storage by the upper Estuary. As a result, this reach of the tidal river is thoroughly flushed several times every year. For example, the total discharge of the Potomac River into the Estuary in the low-water year of 1965-66 was about 1,300 bg, excluding the water taken for municipal use; or 13 times the 100 bg of fresh water in natural storage. In the high-water year of 1948-49, the total discharge of the Potomac River into the Estuary was 3,800 bg, or 38 times the volume of fresh water in natural storage.

Not all of the discharge of the Potomac River is effective in flushing the upper reach of the Estuary, as the rate of discharge must be over about 10,000 cubic feet per second for perhaps as long as a minimum of 10 days in order to reach the brackish-water front. Such conditions occur several times in every year, however, even in years of extremely low water.

In addition to the water discharged into the Estuary by the Potomac River and its tributaries, waste water will also be discharged into the Estuary. The annual amount of this forecast for the years studied, is as follows:

Water Year	Billions of Gallons
1970	93
1980	131
1990	187
2000	260
2010	352

The amounts of waste water shown above will be derived from used municipal water supplied from the Potomac River, water imported into the Potomac River Basin from the Patuxent River Basin, water taken from small streams, wells and springs, and, starting with 1980, water pumped from the Potomac River Estuary. The volume of sanitary waste water is fairly uniform throughout the year. This will make it easier to dispose of the sanitary waste water if it is decided to transport it any distance from the places where it is treated.

The increasingly large volume of waste water will, if properly treated and discharged at the right places in the Estuary, have little or no adverse effect upon the environment. If these things are properly done, the continued availability of an adequate amount of fresh water in natural storage to supply the emergency requirements of the Region can be assured.

By installing the Palisades Pumping Plant it will be possible to meet all of the emergency municipal water requirements of the Region until about the end of this century, without taking more than a small amount of water from the Estuary. Thus there will be adequate time to make the needed changes in the treatment of waste water and its discharge to the Estuary, so as to bring about an improvement in the estuarial water which, it is expected, will be required by the Federal Water Pollution Control Act.

10. Quality of the Water in the Potomac River Estuary

In considering the adverse effects of pollutants in the Potomac River Estuary, it might be helpful to understand how impurities get into the water and how they can be removed. Water is used over and over again in the natural hydrologic cycle of the world. In this cycle atmospheric moisture that is in transportation and storage, almost free of pollutants, eventually falls to the earth as precipitation. There it is disposed of by surface runoff and evaporation, by infiltration into the ground, and by transpiration from trees and other vegetation. All this water remains in the hydrologic cycle. Part of it is initially returned to the atmosphere by evaporation and transpiration, and the remaining portion goes into storage in the ground or in lakes, ponds, and the oceans. From these natural reservoirs it is evaporated to repeat the cycle.

The waters in the natural hydrologic cycle become polluted to a certain extent as they move over the surface of the earth and through the soil and rocks, until again taken into the atmosphere by evaporation or transpiration, or after reaching the oceans from where they are evaporated. In either case they leave the pollutants behind. The pollution of the portion of these waters that is used by man for municipal and industrial purposes is increased, because of use primarily for transporting unwanted waste substances. These substances are usually fecal material, soap and detergents, chemicals, heat and other materials. The water itself is not changed by addition of these pollutants. Upon their removal by the natural process of flowing streams, and while in storage or in man-made treatment plants, the water becomes suitable for reuse. The effectiveness of these natural and man-made purification processes is indicated by the large extent to which water, during its stay on earth, is being reused today for municipal and industrial purposes in many parts of the United States.

Pollutants entering the Potomac River Estuary from the Region are chiefly from the following sources:

1. Municipal Waste Water
2. Storm Waters
3. Boats and Ships
4. Dredging Materials

All of these pollutants can be reduced to a satisfactory level using means now available.

A comprehensive estuarine pollution study by the Department of the Interior to develop recommendations for a national action program, was directed by the Congress in the Clean Water Restoration Act of 1966. Under the Act the Secretary of the Interior must report on the matter by November 1, 1969; but he has indicated that recommendations for action may be made earlier. The study is needed; for, while we may in the past have planned well in our separate compartments for a single purpose there is now a need for consideration of all phases of the Estuary problem in the full perspective of their inter-relationship. It seems that, so far, no group of planners has considered the ecological impact of their proposals on the Estuary, even when confronted with a certain threat to its natural values. What is needed is better Estuary management.

Processes commonly used for many years can be employed to remove pollutants from municipal waste water of the Region. Filtration (usually through beds of sand), sedimentation (by precipitation and settling) and coagulation (by thickening or curdling) can be employed to remove up to 95 percent of the suspended solids. Oxidation by forced aeration can make oxygen-demanding substances inert by removing up to 95 percent of the biochemical oxygen demand (BOD). These are usually referred to as primary treatment (filtration and sedimentation) and secondary treatment (oxidation) and use what is called the activated sludge process.

Nutrients (nitrogen and phosphate) remaining in the effluent from the treatment plants, which result in the biological enrichment or eutrophication of the Estuary, stimulate the growth of aquatic plant life such as algae. These die and sink to the bottom, and as they decompose will absorb oxygen from the water. This shortage of oxygen may kill animal life, which in turn decomposes. This however does not make the water unusable for municipal purposes when properly treated. These nutrients can however be removed by additional treatment such as adsorption, or perhaps by a modification in the conventional primary and secondary treatment to increase the aeration. An increase in aeration can, at least in some treatment plants, remove most of the phosphates which will drastically reduce the growth of aquatic plant life. A joint Government and soap and detergent industry task force has recently been established by the Secretary of the Interior to investigate eutrophication, including the role that phosphates and detergents play in the process, and their possible replacements.

The effluent from waste water treatment plants is normally treated with chlorine to sterilize it. When this is done adequately, the coliform bacteria count can be kept low. Effluent from the Blue Plains sewage treatment plant of the District of Columbia, which treats most of the waste water in the Region, is not well treated. As a result, the effluent pollutes the Estuary more than it should. Instead of the Blue Plains plant removing up to 95 percent of the contaminants, as is possible with a well-designed and operated treatment plant, the removal has been as low as between 60 percent and 70 percent in the summer. In addition the plant does not remove an adequate amount of nutrients, with the result that algae flourishes in the Estuary. These are matters which must be corrected under the Federal Water Pollution Control Act. Plans have recently been initiated toward this end.

Storm waters from the Region should be treated before release to the Estuary to prevent pollution from this source instead of overflowing without treatment when the capacity of sewers is reached as is presently the case. These waters contain pollutants deposited on streets and highways and from other sources, such as garbage, animal and vehicle droppings, newspapers, dirt and pesticides, and all manner of debris. When storm waters overflow, they also contain sewage picked up in the sanitary sewers. In order to treat the polluted storm waters it will probably be necessary to enlarge the sewers leading to the treatment plants, and increase the capacity of the plants. As an alternative, provision might be made for temporary storage of storm waters so they can be subsequently transported to treatment plants through existing sewers a little at a time, to avoid need for increasing capacity of the sewers and the treatment plants.

The District of Columbia has, for a number of years, gradually been separating storm sewers from sanitary sewers so that storm waters will discharge directly into the Estuary without treatment. This does not solve the basic problem of keeping pollutants out of the Estuary, and in addition is costly. Also unfortunately, there is usually considerable precipitation in the Region during the low-flow season, and storm water flushes pollutants into the Estuary when the river is not high enough to flush them out.

Storm waters can be stored temporarily in a number of ways, depending upon circumstances. Among these are storage in ponds and sewers, and storage in tunnels and caverns beneath city streets. The City of Chicago is presently boring a tunnel beneath streets, near the northern city limits, for use as a waste-water storehouse. Waste water after a storm can be gradually pumped from storage into the existing sewer system leading to treatment plants. It has been estimated that this method of handling storm waters is less costly than separating storm and sanitary sewers, and in addition provides for treatment of the storm waters, not usually contemplated in the separation of the sewers. Several other major cities in the United States either have started construction of projects to eliminate pollution from storm water or are studying the matter.

Pollution released from boats and ships in the Estuary can be controlled by promulgating proper regulations. Major sources of pollution are sewage, oil, garbage and ballast and bilge water. Steps have recently been initiated to control these by Federal legislation.

Pollution of the Estuary by dredging materials is being studied and it is expected this will be adequately controlled in the foreseeable future.

Although the average citizen of the Region is likely to call the Potomac River a cesspool or an open sewer this is to say the least incorrect. The quality of the water entering the Region is reasonably good and is improving. The quality of the water in the upper Estuary is determined by the Region and not by upstream abuses, as pollution in the Estuary remains near its originating source. Primary cause of the difficulties in the Estuary is growing population and lack of adequate treatment for waste and storm waters that are discharged directly into the Estuary. If the steps previously outlined in this study are taken, quality of the water in the Estuary should improve considerably.

The cost of keeping pollution out of the Estuary will be relatively small in comparsion with the increasingly adverse effects that may be otherwise expected if this is not done. Among other things, it will be less costly to take municipal water for emergency use from a clean Estuary than to construct 16 large dams and reservoirs upstream to dilute pollution and supply the water.

The upper Estuary of the Potomac River would in each month of a low-water year receive more water from the discharge of the river than would be taken from the Estuary for municipal water in each of the years studied, until July in the year 2000. Starting in that month under these emergency conditions, more water would be taken from the Estuary than would be supplied by the Potomac River discharge in the months of July and August, as may be seen in Table 4. This condition could first occur in a low-water year between the years 1990 and 2000, and might occur in any year thereafter under these emergency conditions. Such emergency conditions may be expected only occasionally, as previously noted.

By the year 2010 the amount of water taken from the Estuary would in a low-water year slightly exceed the discharge of the Potomac River in the month of November as may be seen in Figure 3. The net amount of water taken from the Estuary would however be relatively small and not of significant importance.

It will be observed that the net amount of water taken from the Estuary for municipal water is relatively small in all cases compared with the 100 bg of fresh water held in natural storage.

Table 4

COMPARISON OF THE AMOUNT OF WATER REQUIRED FROM THE POTOMAC RIVER DURING SUMMER MONTHS WITH THE 1965-66 DISCHARGE

		mg		
		Required From P.R.	P.R. Discharge 1965-66	Excess Discharge
1970	Jun	7,900	58,300	50,400
	Jul	9,600	24,000	14,400
	Aug	9,100	20,300	11,200
	Sep	7,550	119,200	111,650
1980	Jun	11,700	58,300	46,600
	Jul	14,200	24,000	9,800
	Aug	13,500	20,300	6,800
	Sep	11,200	119,200	108,000
1990	Jun	17,400	58,300	40,900
	Jul	21,200	24,000	2,800
	Aug	20,100	20,300	200
	Sep	16,700	119,200	102,500
2000	Jun	24,900	58,300	33,400
	Jul	30,400	24,000	(6,400)
	Aug	28,700	20,300	(8,400)
	Sep	23,800	119,200	95,400
2010	Jun	35,000	58,300	23,300
	Jul	42,700	24,000	(18,700)
	Aug	40,300	20,300	(20,000)
	Sep	33,400	119,200	85,800

All the water that enters the municipal water systems of the Region will be discharged into the Estuary as effluent from waste water treatment plants, except for losses by leakage from the water and sewer systems, use losses such as evaporation, transpiration from watered plants and trees, or passage into the ground after use. These losses will be about 25 percent of the total entering the water systems.

In the year 2010 for example the following quantities of waste water from municipal systems are expected to be returned to the Estuary during the summer months.

Month	Billions of Gallons
June	47.9
July	58.3
August	55.0
September	46.7

These amounts are substantially greater than the net amounts it is proposed to take from the Estuary for municipal water supply shown in Table 4. As a result, the use of water from the Estuary for municipal water supply will not decrease the total volume of fresh water in natural storage, and the brackish-water front will not move upstream because of this use.

It may be desirable at some time in the future to transport part or all the municipal waste water of the Region to a point near the brackish-water front before discharging it into the Estuary. This would, to a considerable extent, prevent mixing the waste water with the fresh water in natural storage. The need for such transportation will not develop, however, until about the end of this century, as there is about 13 bg of fresh water of good quality in natural storage in the upper Estuary between Little Falls and the Blue [illegible]ins Waste Treatment Plant.

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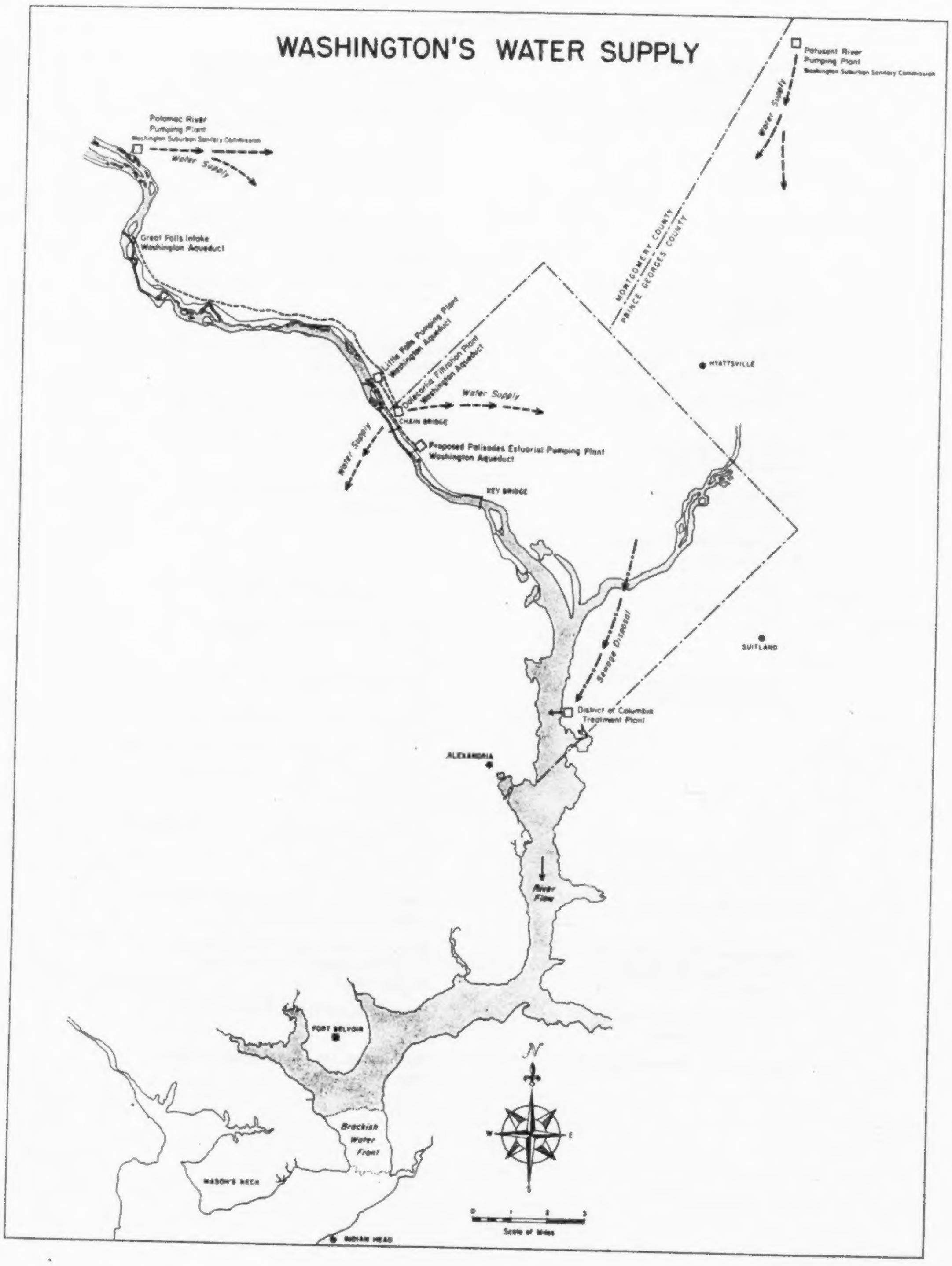

WASHINGTON'S WATER SUPPLY

Potomac River
Pumping Plant
Washington Suburban Sanitary Commission
Water Supply
Patuxent River
Pumping Plant
Washington Suburban Sanitary Commission
Water Supply
Great Falls Intake
Washington Aqueduct
MONTGOMERY COUNTY
PRINCE GEORGES COUNTY
Little Falls Pumping Plant
Washington Aqueduct
Dalecarlia Filtration Plant
Washington Aqueduct
Water Supply
HYATTSVILLE
CHAIN BRIDGE
Water Supply
Proposed Palisades Estuarial Pumping Plant
Washington Aqueduct
KEY BRIDGE
Sewage Disposal
SUITLAND
District of Columbia
Treatment Plant
ALEXANDRIA
River
Flow
FORT BELVOIR
N
W
E
S
Brackish
Water
Front
MASON'S NECK
0
1
2
3
Scale of Miles
INDIAN HEAD

Mr. **Wright.** If the gentleman has a particular feeling about these projects—a vendetta, as it were—I think he is perfectly within his rights to pursue the course of this hearing stating his case. However, to resolve that into a broad-brush condemnation of the Corps of Engineers or of the Public Works Committees of the Congress I think is a bit far-fetched, particularly since none of the projects you mentioned has been authorized by the Congress.

Mr. **Smith.** Mr. Wright, if I may, in response to that: First of all, there is no vendetta. These are very hard facts. They represent the feelings of great numbers of people in the basin. Nobody is blaming the Army Engineers.

We are simply saying that they are not qualified to deal with the problems before them. The problems before them are not problems in how to store water in reservoirs. The problems before them are the proper management of the water resources in the basin, and all the other natural resources and human problems of the basin. They are not qualified to do this.

Mr. **Wright.** Who would be qualified to do this?

Mr. **Smith.** It will take some agencies that are oriented toward other purposes. I suggested here that the proper thing to do with the Army Engineers is to move the military personnel back into the defense activities and transfer the civilian staff to the National Air and Federal Water Pollution Control Administrations.

You men in Congress have set up these agencies to accomplish certain beneficial purposes for the American people. The funds that are being thrown away on dams should be channeled into these agencies, and the staff—which is, I am sure, a very competent staff in the civilian Civil Works Division of the Army Engineers—ought to be reassigned to agencies which have other jobs to do.

Mr. **Wright.** I think it is just that syndrome that I find so upsetting. The glib assurance with which you just toss out the words "this money is thrown away on dams." I wonder if you are aware that of the first $4 billion spent by the Army Corps of Engineers in these 30 years on flood control dams, calculable savings of property to American taxpayers has amounted to more than $14 billion—more than 3-to-1 in benefits.

Moreover, these are past benefits and the dams are there to prevent additional damages that otherwise would occur. Do you remember the days of the rampaging Mississippi and the terrible floods that used to occur frequently before the Army Corps of Engineers began its civil works function in flood control?

Mr. **Smith.** Congressman, I would reply to it this way: I can take you up to a watershed in West Virginia, upstream from Moorefield, W. Va.—the so-called Moorefield River, South Branch of the South Fork of the Potomac, in what was once heavily flooding country.

Floods are completely under control in the Moorefield River by virtue of the fact that Congress authorized the construction of 25 small headwater impoundments on that river which have the floods entirely under control.

Mr. **Wright.** Were those done by the Corps of Engineers?

Mr. **Smith.** The Soil Conservation Service.

Mr. **Wright.** They are under attack by some on the same premises on which others attack the Corps of Engineers. Inasmuch as you commented on the nature of making an adequate study, do you have any idea what the average time lapse is between the initial authorization of a study and the ultimate authorization of the beginning of a project?

Do you know how long a time is required to complete this labyrinthian process of study and restudy? Do you know the average?

Mr. SMITH. Probably very long. In some cases it is probably fairly short. On the Potomac River Basin, the original study began around 1927. The Army has changed these justifications, its benefit-cost ratios, about every 10 years during that period.

Mr. WRIGHT. Do you attribute to the Army Engineers some sinister desire just to build things, sort of to perpetuate themselves? Is that the way you feel about it?

Mr. SMITH. In part it is true, yes. You have a very large executive branch bureaucracy here—some 50,000 people—which has a concern for its own self-perpetuation.

Mr. WRIGHT. Mr. Smith, for your information, the average time that expires between——

Mr. SMITH. I can't answer that question——

Mr. WRIGHT. I would be happy to inform you. What we are describing is the period beginning when the Congress directs the Corps to begin the study, the time the Corps and the district take to make the study and have it reviewed and approved and then sent to the Governor of the State, and then sent for analysis to the related agencies—transportation and all the others, water supply, water purity, recreation—then sent to the Bureau of the Budget and back to the Congress for approval. The average time is 10 years and 8 months.

Now if a project is urgently needed during this period, people often get flooded out. I could cite you one instance of a careful 7-year study during which the entire neighborhood was flooded out of its homes 11 different times.

Now, are you asking for longer study?

Mr. SMITH. I am asking for a completely different approach to the flood problem. The flood problem should be handled by networks of headwater reservoirs which can be built by the Army Engineers or by the Soil Conservation Service. However Congress may direct.

But the problem needs to be handled by stopping the rainfall where it falls on the farmland, in the forest, by small reservoirs which will not do the kind of damage the big reservoirs do downstream.

Mr. WRIGHT. I quite agree with you as to the value of this program—this upstream flood control program. It must be accompanied by sound land use management on the part of all the operations and building of terraces and planting cover crops in the winter.

I think it has enormous value. But let us address ourselves just briefly to another situation where critics hooted in glee when the Corps built a dam above Denver and it stood there for 2 years, hardly retaining enough water to allow anyone to fish.

Everybody said, "Look what that stupid Congress and the Engineers did—throwing away our tax money on this monstrosity!" Yet, after one flash flood in the third year of the life of this dam, it collected enough water to save the city of Denver from damages that would have exceeded the cost of the dam. At the same time, the dam provided enough storage of water, sold at the going residential rate, to repay the cost of the dam.

So in one flash flood this dam paid for itself twice. Once in the provision of water supply storage for a city that needed water, and again in saving the city from damages.

I beseech you not to be too glib and too superficial in a condemnation of the work of the Army Engineers. As to the long-range necessity of their work, we had testimony only yesterday concerning the conglomeration of population in certain areas, notably Los Angeles.

A Member of Congress from that area offered criticism of certain proposals in California to make it feasible for still more people to be brought into that area.

The colloquy in the committee elicited suggestions that maybe it would be well for us to help to disperse the population rather than to congest it.

Is the gentleman not aware that population centers have sprung up where there are navigable waterways, and that such projects by the Army Corps of Engineers have made it possible for other cities to spring up and provide employment opportunities away from our more congested areas?

Mr. Smith. I am well aware of that. I should just comment, Congressman, that I have been a professional student of these problems for 25 years. I am not an amateur. One of the things that has happened in the country is that cities have been built on flood plains where they should not have been built.

I don't make any proposal that we destroy them and move them out. Maybe there might be some merit in some relocation in some cases. In those instances you have to give them some flood protection.

I am suggesting your Soil Conservation Service approach—and the agency doesn't matter. It is just a better system, that is all. We need more of that. We are not beginning to get enough of it. I think you are undoubtedly familiar with the fiscal review problems that have held this whole program up.

Mr. Wright. May I interrupt to say I am indeed familiar with it. I have the privilege of being chairman of the Watershed Development Subcommittee of the Public Works Committee. My subcommittee authorizes these very projects you describe.

I think there ought to be more, not fewer, of them. But at the same time I think it unfair for us to seek scapegoats—to reach out so quickly and so unfairly to condemn an agency like the Army Corps of Engineers. The Corps of Engineers, in its appraisal of benefits over cost, has, in fact, been demonstrably conservative over the years.

Look, for instance, at the Gulf Intercoastal Waterway. The corps predicted the waterway might ultimately handle some 7 million tons of commerce annually.

Last year this waterway handled better than 60 million tons of commerce. Approximately nine times as much. So that what I am trying to say is that I am with you. I am for you. I agree that we ought to be putting more money into the stopping of floods and the preserving of the land where the water falls before the first rivulet carves out a gully and becomes a flood and inundates downstream homes and factories.

But at the same time, I want to say that I believe those of us who are interested in conservation really ought not divide ourselves and try to make scapegoats of other agencies that do very excellent work. When you do that, you lose me.

Mr. Smith. I am glad to have you make those points. I am in agreement with much of what you say. This is not a question of scapegoats. We are trying to make an accurate appraisal of the governmental institution here, and since you gentlemen have responsibilities in the Government operations field, many of us feel that this is one you ought to look at.

It is not a good system which channels requests for heavy Federal public works outlays without passing them through the Bureau of the Budget. This is bad.

In terms of the constitutional and legislative structure of the Government of the United States it is not an efficient organization. Let us put it that way.

One other point:

With regard to your question of the flood plains: The Army Engineers have had an office on the Ohio River, where my impression is that they have been doing some very fine studies of this question. It is a question of getting the Army Engineers, or something with the same engineering talent, working on the right assignments.

Maybe it comes back to Congress after all. Here the study is how they can prevent the settlement of flood plains which ought not to be settled; and part of the flood problem is that we just happen to have a situation on the Potomac where Department of the Interior studies recently have shown that probably there is no flood problem on the Potomac River Basin at all, except down here at the Mall, for the reason that there hasn't been heavy settlement on the flood plains.

Our problem is zoning now, to keep it that way. The Army has pretty well withdrawn flood benefits from its estimates. Their original estimates had heavy flood benefits in them which almost, by their own admission now, weren't sound at the time; so that flood plain protection, zoning to prevent the settlement of the flood plains, is essential.

Where you have them already settled and you need a big reservoir, or middle size reservoir, or the kind of thing you are talking about at Denver, to save the situation, nobody quarrels with this. It is the bad planning and the bad objectives—mainly the bad objectives—and partly also the disposition—talking to the actual operation of the Army Engineers—the disposition to simply ignore and never adjust to any of the criticisms made of the programs.

One further comment: What happened here on the Potomac River Basin? In 1961, the first big plans of the Army Engineers were brought out for 16 big reservoirs for the dilution of pollution. The resistance began with the American Farm Federation in my county in Pennsylvania—and I was in it as a dairyman, I shipped as much as 600,000 pounds of milk into Philadelphia in a year's time. I am a commercial dairyman with a lot of experience.

I am a member of all the farm organizations. We organized in that county and took it to the Pennsylvania Farmers Association and to the National Farm Bureau Federation. The American Farm Bureau Federation went on record in opposition to these reservoirs.

Meanwhile all the conservation organizations joined together. At that time it was a technical study by the National Parks Association in which they concurred. No legislation was involved.

The United Automobile Workers and the United Mine Workers, as well as the Farm Bureau and the National Grange, also concurred.

That coalition for the defense of the Potomac River Basin had something like 7½ million people represented in it, organized across the United States. Just take the membership of those organizations. Eventually it was formed into the Citizens Permanent Conference on the Potomac River Basin.

It gave the movement more flexibility to deal with these problems, and the various organizations as such don't function in that capacity now. The directors act as individuals, merely identified as associated with the organizations.

The National Parks Association, for example, is not as such in the Citizens Permanent Conference on the Potomac River Basin. I serve as general counsel to the conference, without compensation, in my independent professional capacity.

In spite of the tremendous opposition, with citizens organizations all over the Potomac Basin, this thing had to be taken to President Johnson. It was taken to President Johnson, and President Johnson directed Secretary Udall to restudy the problem and come up with an alternative program for his approval.

In other words, we had to take this thing to the President of the United States to stop it, though hearings were held all over the basin. We were at mass meetings where farmers came out and stayed from morning until night and got somebody else to do their milking that day.

There was a mass resistance all over the Potomac River Basin in 1961, 1962, 1963. In spite of that, these fellows go ahead with their program. It is an executive branch bulldozer operation in which people don't count a tinker's darn.

Now you ask why are we angry with the Corps of Engineers? It is not a vendetta. It is a question of the defense of farms, homes, businesses and communities all over the Potomac River Basin against an unthinking and insensitive and callous organization.

Mr. WRIGHT. I would not want to pursue this particular matter further. I thank you, Mr. Chairman, for yielding so much time.

Mr. REUSS. Time is going on.

I would like to recognize Mr. Vander Jagt.

Mr. VANDER JAGT. Thank you very much. I would like to thank you all for thoughtful, helpful statements and direct the first question to Dr. Purdom:

On page 4 of your statement, Dr. Purdom, you mentioned that we are realizing a folly of trying to use what you call the natural adaptation of man in disposal of waste products. What did you mean by that?

Dr. PURDOM. In respect to many of the insults that man receives in the environment that are manmade, one sees the popular literature occasionally where man is a very adaptable individual.

We tend to make such judgments when we see some physiological reactions taking place from air pollution and things of this type. Well, such insults may not be really harmful. Man has the mechanisms to cope with these kinds of problems. Thus, the people who advocate this position seem to rely on the fact that man is adaptable and has adapted.

But very eminent authorities in this field such as Rene Dubos and others have pointed out that these assaults take place at a cost, and he fears—and many of us fear—that the cost is too great.

Mr. **Vander Jagt**. You mentioned later on in your statement that there have been instances where we moved from 50 percent pollutant removal to 80 percent to 90 percent, but that was still not enough to stop the polluting of, say, a river or a lake. And you suggest that we move to a new concept of zero pollution. Do you have any idea as to how you can bring that about, say with the treatment of sewage? How are we going to achieve a zero pollution?

Dr. **Purdom**. In many circumstances, if we carry on human activities, I don't think we will actually achieve zero pollution in all areas at any time in the immediate or very near future. But this is a matter of philosophy.

If you accept zero pollution as a concept, and give preference to the processes that result in that and begin to make your compromise at that point, you will end up with a cleaner environment than you could if you begin to compromise at some higher level of pollution that is stated as generally acceptable.

Mr. **Vander Jagt**. I wonder if what you weren't telling us later on in your statement, together with zero pollution and the actual adaptation of man—where you said we have to start thinking of the recycling of solid products now considered waste which are really resources in the wrong place—I wondered if you weren't trying to tell us we should change our basic concept in our approach to the problem.

Dr. **Purdom**. In many circumstances I think this is the case. In relation to zero pollution, I think we need to give emphasis to those processes that end up with no pollution and take them into account.

In connection with the problem of waste, there are many valuable constituents—you mentioned solid waste—particularly municipal refuse and some industrial and agricultural materials. The properties of such wastes are valuable.

Our economic situation has developed to the point where frequently we consider it just not worth the bother to rescue these valuable constituents. The time will come when we will have to change that philosophy from the standpoint of resource management.

But at the present time, and from the standpoint of solid waste management, we could go far in eliminating our problem if we could take these products and put them back into useful purposes.

Mr. **Vander Jagt**. I wondered if you weren't talking about the same thing that Mr. Smith was talking about, when he said with respect to sewage methods that are available for getting effluents out onto the land and into the woods as fertilizers—where these materials would be pollutants in the water or would accelerate the eutrophication process, but where on the land they are a natural resource.

Weren't the two of you talking about the same thing?

Dr. **Purdom**. I think so. There is research going on at Johnson City, Tenn., to mix sewage solids with municipal refuse, to the benefit of both, by the development of compost.

Municipal refuse is pretty low on nutrients and one of the problems with sewage is that it is high in nutrients—phosphate and nitrogen. By mixing the two together you end up with a better compost than otherwise. One of the purposes of the study is to see if this can be handled in such a way as to not create a problem in itself.

Mr. **Vander Jagt**. Mr. Smith, you mentioned the research going on at Penn State which is sort of a spray irrigation of phosphates and nitrogen onto the land where they enhance the land rather than create the pollutant, but you said nobody pays much attention to that; is that correct?

Mr. SMITH. Well, that seems to be the case. I have been sort of trying to show this process to people for a number of years. It was begun 5 or 6 years ago. This is at University Park, Pa. They take the effluents from the secondary treatment, spread them on farmland and forest land. Agricultural type sprinklers. They get a sharp increase in hay production. A sharp increase in timber growth.

Within about 8- to 10-inches of the surface of the ground, the effluents have been completely decontaminated by bacterial operations in the soil.

Mr. VANDER JAGT. It might be encouraging and helpful and it might be a ray of light for you to know, Mr. Smith, that a team of scientists and technicians have carefully studied the Penn State plan and a group of other similar plans in the whole world, and have come up with a plan for the county of Muskegon in Michigan. It is a proposal where they intend to put this in as a demonstration project dealing with all of the waste and changing the basic concept of sewage, not as a waste to be disposed of but as a natural resource to enhance the land. Even more encouraging, the FWPCA within the last month or so awarded a significant grant and indicated a great deal of interest in this plan, all of which leads me to the question: Is it not possible that if our present technology is wrong—and both of you have been suggesting perhaps in some areas the need for a whole new concept—then no matter how many billions of dollars we appropriate, we aren't going to solve the problem?

What is equally important is coming up with the right approach. Possibly we have been going in the wrong direction. What are your comments on that?

Mr. SMITH. That question is very apropos. My guess would be that this is so. It is very encouraging to have you tell me that this work you speak of is being done. I would think if we could get more of that kind of thing going, then we perhaps would not have to spend so much money on treatment plants. I would like to put this in terms of being a dairyman: I wish my farm were situated close to one of these Penn State type operations. This is both irrigation water and fertilization.

Mr. VANDER JAGT. I would love to explore this at great length with all of you, but with the chairman's indulgence for a few more minutes there are a few things I would like to establish for the record if we can do so very quickly.

You mentioned, Mr. Smith, that the steel scrap should go back to the mills. Here the major problem is the abandoned and junk automobiles. Do you have any suggestion as to how we can get the steel scrap back into the mills?

Mr. SMITH. Well, Congressman, may I make this comment first: I was for 18 years assistant general counsel to the old CIO. I am a labor lawyer by origin. I was counsel to the United Steel Workers of America. Incidentally, they have a good conservation department. We developed quite a few programs for industrial planning in the steel industry quite a few years ago which never came to very much, but they always assumed that the steel scrap went back to the mills.

Now, this is a new phenomenon where the steel scrap doesn't go back to the mills. Automobiles went back to the mills 30 years ago. They did get picked up. You can think of quite a number of devices here. Suppose there is a refund attached to returning the steel, and suppose the refund is 100 percent of cost. All the cans, let us say, that go through the supermarkets, this is a one-way flow. There is no provision for bringing them back, and the companies that turn out the products advertise the fact that you don't have to bring them back.

Suppose for every 25 cent can of anything you bought you had to lay out another 25 cents on the line and got that back. When you brought it back to the supermarkets, they would have quite a job getting back——

Mr. Vander Jagt. You are in a fruitful area when you suggest a refund. I think everybody would agree we ought to get the steel scrap back into the process and get it recycled. In my particular office we have been trying to come up with a plan and have been working on it for 6 months; and I assure you it is an extremely complicated business.

Though we all agree on the goal of getting the steel recycled, it is an infinitely complex and complicated matter. I am very interested in all these areas and use steel only as a symbol: How do we get the job done that we all agree should be done?

On page seven, Mr. Smith, you mentioned that we should make greater use of the so-called scenic easements. In this case, the property owner could continue to own the property subject to the scenic easements. Would not this make it much cheaper for the Federal Government to preserve and protect the natural beauty of an area, still achieve its goal and yet not have to purchase the total title to the land?

Mr. Smith. Yes, it would. In some cases the difference would be very great. In some cases it might not be so great.

There would always be some differences there, particularly in relatively rural land, if you are looking farther ahead, and you have a great many people, for example, along our rivers who want to stay in farming and want to keep their woods. In many instances they would be glad to donate covenants running with the land in perpetuity. It gives them protection. Their neighbors get protection. The community gets protection.

If in addition to that, an appropriate purchase price were added, you could probably get this kind of thing for relatively low prices.

Mr. Vander Jagt. Speaking for yourself and your association, you are enthusiastic about the use of the device of scenic easements where appropriate; is that correct?

Mr. Smith. Yes; by all means.

Mr. Vander Jagt. Thank you. Mr. Pomeroy, you told us a lot about what trees do to enhance our environment and you mentioned that they absorb carbon dioxide and release oxygen. Can you give me any kind of handle or ball park figure as to how much carbon dioxide they do use up? For example, to overcome the carbon dioxide that would be spewed by one automobile into the atmosphere, do we need 10,000 trees? Ten million trees? How much good do they do in terms of the carbon dioxide problem?

Mr. Pomeroy. I don't have an estimate of that relationship. However, an interesting item came to my attention yesterday that one large tree has the effect of 10 air conditioners on the atmosphere.

There wasn't any background for it. I presume it must have been a large oak with a very large canopy. Certainly, it wasn't a very small tree. But this is the sort of question we often get. How much water does one tree transpire into the atmosphere? How big is the tree and where is it growing? Trees do have important effects, but they are difficult to measure.

Mr. VANDER JAGT. But all you know is one large tree offsets 10 air conditioners. You can't tell us in what way or—I am looking for some sort of ball park figure as to how much good our trees do do.

Mr. POMEROY. Well, it depends on where the tree may be. In some areas, local groups have been quite strong in urging that the trees be cut off because they transpire moisture from the soil into the atmosphere. This is particularly true in some areas in the Southwest. I am not at all sure that is a good idea either. Certainly, it needs to be controlled activity.

Mr. VANDER JAGT. I was impressed with the little incident you told us, of the lady with 125 acres of forest land that she wanted to keep that way. But she was living on a pension, and in 2 years the taxes have increased from $190 to almost $1,000. Would you say that is an illustration that our tax policy in many areas penalizes people for wanting to preserve forest lands?

Mr. POMEROY. Yes, very definitely; but it is a problem that is difficult to do anything about at the Federal level, because the taxes are determined locally.

Mr. VANDER JAGT. Would you have a suggestion as to what the Federal Government could do? I know it is complicated because of the State and local determination of that type of tax. Would you have a suggestion?

Mr. POMEROY. Our suggestion has been for State and local associations to work more closely with tax assessors, to see that they are informed as to what the various values are and to try to urge good zoning especially along the line of the Wisconsin program.

Incidentally, I was a native of Michigan and a resident of Wisconsin and presently am in Maryland. It is only rarely that I have an opportunity to appear before Congressmen from these three States at one hearing.

Mr. VANDER JAGT. I think it might help me try to get your message to the tax assessors in Michigan where you were raised if I could tell them 100 trees will make up for the damage caused by the carbon dioxide of one Buick. Isn't there someone in your organization who could come up with a figure?

Mr. POMEROY. I will see if we can't find something on that order for you.

(Subsequently, Mr. Pomeroy wrote Congressman Vander Jagt as follows:)

THE AMERICAN FORESTRY ASSOCIATION,
Washington, D.C., February 5, 1970.

Hon. GUY VANDER JAGT,
House of Representatives,
Washington, D.C.

DEAR MR. VANDER JAGT: It was a pleasure to discuss the beneficial effects of trees upon the environment before the Subcommittee on Conservation and Natural Resources on February 3, 1970. Your question regarding the volume of carbon dioxide (CO_2) removed from the air and the quantity of oxygen (O_2) returned by trees was especially interesting.

It is not possible to present precise estimates of the interchange of CO_2 and O_2 because growing conditions vary so greatly between soil types. Climatic conditions and availability of moisture also are variable. Furthermore various species of trees respond differently to the same conditions. But some extremely broad generalities can be offered. Before mentioning these generalities, it is desirable to provide some background information:

"The carbon supply for organic synthesis is comparatively limited. Under natural conditions there must be a continual circulation of carbon as carbon dioxide into plants, then to animals, or to bacteria and back again to carbon dioxide. * * *

"Carbon dioxide (CO_2) of the atmosphere is produced from the respiration of plants and animals, by the combustion of plant remains as wood or coal, and by the solution of carbonate rocks. * * * In land plants the principal entrance of CO_2 is through openings, 'stomata,' in the leaves. Oxygen and water vapor also pass through the stomata. * * *

"CO_2 is broken down in the leaf by the energy of light in photosynthesis. In the process oxygen (O_2), is freed for return to the atmosphere. The carbon remains as a part of the dry weight of cells. * * *." (Plant Physiological Chemistry, Harvey, R.B.)

The summary equation for photosynthesis is:

$$\underset{\text{(carbon dioxide)}}{6CO_2}+\underset{\text{(water)}}{6H_2O} \xrightarrow[\text{(sunlight)}]{\text{673 kg.-cal. of radiant energy}} \underset{\text{(sugar)}}{C_6H_{12}O_6}+\underset{\text{(oxygen)}}{6O_2}$$

Some studies have shown that for each ton of carbon taken from the atmosphere and fixed in compounds in the tree about 2.7 tons of oxygen are released.

Other studies pertaining to fire control in forests of southern pine indicate a net accumulation of organic matter (dead leaves, twigs, and so forth) of 8 to 11 tons per acre per year of which one-half would be carbon. On this basis the amount of oxygen released per acre per year is 10 to 15 tons. Some allowance must be made for oxygen consumed in decay of organic material.

Perhaps of more immediate interest to you in view of the importance of apples and peaches in your district are estimates that 30 leaves will produce one Jonathan apple or one large peach. One should bear in mind that the same leaves also contribute to growth of twigs, stem, and roots.

Photosynthesis, that vital link in man's existence, must be carried on in the presence of water to permit the interchange of carbon dioxide and oxygen. Trees absorb tremendous volumes of water through their roots. Yet little of it remains in the tree. About 99 percent of the water passes through the tree into the atmosphere. It has been estimated that a single birch tree may give off through its 200,000 leaves as much as 900 gallons of water on a summer's day. (The Forest, Life Nature Library.)

Studies by Forest Service scientists at field installations in various parts of the United States show that transpiration of water by trees is directly related to the total amount of annual precipitation. The volume transpired ranged from 54,000 gallons per acre for chaparral in a dry year in Arizona and California to 490,000 gallons per acre for Coastal Douglas Fir in the Pacific Northwest. In the Lake States hardwood forests transpired about 326,000 gallons per acre in a year of normal rainfall. Pine forests in the same region transpired somewhat more water.

This brief review indicates the importance of trees in removing carbon dioxide from the atmosphere and recharging it with oxygen and water vapor. It also emphasizes the concern of foresters for prompt revegetation of barren land and protection of forests from destruction by fire.

In this connection we urge your support for full funding of the Cooperative Forest Fire Protection provisions of the Clarke-McNary Act of 1925 and enactment of the present bill for establishment of a National Wildlife Disaster Fund as proposed in H.R. 11597.

Sincerely yours,

KENNETH B. POMEROY,
Chief Forester.

Mr. VANDER JAGT. One final question for Mr. Allen.

You estimated in your statement that it would take $200 to $300 million to clean up Lake Erie. The figure I heard is $3 or $4 or $5 billion to clean up Lake Erie. And I wanted to know what you had in mind as to the $300 million doing the job?

Mr. Allen. I am afraid I am not able to give you the exact source of that information. I questioned the figure somewhat myself because it seemed very low. We will supply more detail on that for the record.

(Subsequently Mr. Allen advised the subcommittee that "According to the 'Lake Erie Report: A Plan for Water Pollution Control,' prepared by the U.S. Department of the Interior, Federal Water Pollution Control Administration, Great Lakes Region, in August 1968, it is estimated that the immediate needs for control of industrial waste discharges will cost $285 million. Our reference to $200 to $300 million was in regard to just compensation that should be required from industry for their contribution to the pollution of Lake Erie. To deal effectively with other sources of pollution—sewage, agricultural runoff, and municipal wastes—would require a much larger outlay.")

(Chapter 6 of the above-mentioned report, forwarded to the subcommittee by the A.I.A., is in the subcommittee files.)

Mr. Reuss. Mr. Gude?

Mr. Gude. Thank you, Mr. Chairman.

I believe both Mr. Allen and Mr. Pomeroy, in response to Mr. Vander Jagt's questioning, have touched on a very critical area. If we are going to analyze the resources of our Treasury, we can't buy all the open space we would like to have.

This question of assessment both of forest land and agricultural land is something to which I think an organization such as yours must devote a great deal of time. In Maryland, some contend that the low agricultural assessment is the haven for the speculator. They hold onto the land though the value of it has been built up, they are still receiving a low farm assessment. Then they cash in when it goes into high density residential zoning and that is the end of it. This probably creates more trouble than all of the value received from the years it was in agricultural assessment.

This question of scenic easement and lower assessment really needs a lot of attention.

Mr. Pomeroy. I believe you have a law in Maryland where the owner can file his property with the State forester and this sets the assessment rate on forest land from then on. However, if the owner sells the property for some other use he has to pay up the deficit.

Mr. Gude. This is the kind of feature which can be geared into the law, but I don't think there is an awareness of this in the States all across the country. It is something that must be handled at the local level to the zoning and assessing level.

Mr. Allen. I think that the whole question of taxes, property taxes, certainly needs to be looked at very seriously. I think we have a situation now where the properties which actually cost the public the most are being taxed the least, particularly in our urban areas.

There is another aspect of this tax problem. The properties which maybe are of least cost to the public and of greatest value to the public are being taxed the most. This doesn't encourage development of this kind of property to its best use.

We have examples of buildings which, because of their excellence in design, have been penalized by having an excessive valuation put on them and the slum areas which cost the city a great deal in police and fire protection are taxed the least and therefore are encouraged to stay as slums.

I think the same thing applies in terms of the rural areas and some method, I think, needs to be found to use taxes as an incentive to develop the land in the best interests of the public.

One thought has been that in the urban area having land remain as parking lots in certainly not in the best interest, and yet our tax methods encourage this.

On the other hand, in the rural area where we want to keep open land, the situation, as you pointed out, exists where a property is held for some time and the neighboring development rises in value to the point where an owner can no longer keep it in rural occupancy and has to sell it off to a developer. I think none of this is in the public interest and some reevaluation of the whole tax structure is essential if we are going to solve these problems.

Mr. GUDE. Well, there has to be something built into these local laws and ordinances which is an incentive for a farmer and a forest owner to keep his land in that condition—because he has problems of living, and what is going to happen when he dies, with his family and how the land is transferred. This line of endeavor would be very fruitful for your respective organizations.

I would certainly like to commend Mr. Smith for his statements. They have not been idle generalities because he has a fine record of applying the principles he enunciated here on the Potomac, in his leadership in the fight against the high level dams. I think they were beaten back, and the high level dam in Seneca has really been a good watermark here on the Potomac.

It seems to me that, rather than looking on this as a confrontation between institutions, we must redirect these present institutions into new directions.

I am reminded of the situation here in the District of Columbia where the Department of Sanitation, with great foresight a number of years ago, went around and gathered up what were then termed wastelands to be used for solid fill disposal. Now, when they are ready to use them, they suddenly find these lands have great value. I think if they had tried to use these lands 30 years ago, no one would have objected to wetlands being filled in; but we have come to realize their value. I don't believe we can condemn the Department of Sanitation because of a change in attitude and concept as far as values go.

It seems to me if we could redirect the Corps of Engineers into developing the tunnel system of handling the combined sewage which comes from the city of Washington here—the mixture of storm and sanitary sewer water which is contaminating the lower estuary—that this would be a more worthwhile project than dams upstream. I think we have to go to 100-percent cleanup of the water. We want waters in our estuary that are potable and a river in which you can go water skiing without disinfecting yourself or take your girlfriend canoeing without holding your nose. We want to redirect the institutions.

I understand the Corps of Engineers is hiring conservationists now and that is a step in the right direction.

I certainly have enjoyed hearing this presentation.

Mr. ALLEN. Just one comment which relates back to the previous discussion on the Corps of Engineers. It seems to me in all of these areas, what is really needed is a multidisciplinary approach to decisionmaking. If any one group with particular interest makes the decision it is likely not to be in the best interest of the total project and of the Nation. If we could bring together a mechanism that would bring together all the disciplines that would be involved we would have much better judgments.

Part of the problem with the Corps of Engineers' decisions is that the cost-benefit ratio does not actually consider sufficiently the values that—or maybe the amenities of the situation that are equally important to the public.

Mr. Veltman. I would like to make a short statement here underlying many of the questions that a lot of you gentlemen have asked.

We are presently involved in attempting to use ecological information for planning purposes. In order to make these decisions on land use we need vital ecological information. Ecological information exists and governmental agencies are involved in gathering and disseminating the data. The Department of Interior is engaged in enormous amounts of information gathering. But the type of information we need is in the development planning area. Where the pressures are the greatest, where our cities will expand, we do not have the information.

We also need urban ecological and natural resource data about the peripheries of our cities. The industrial areas that are growing up in our marshes is an example of the type of area about which we require more data. We do not have the proper information to do this, due to the biases of the existing data.

Now, redirecting existing agencies such as Interior to collect vital information as to where the pressures are being brought is what we need in order to analyze the problem. We all have a good idea of what the problem is, but to make a sound recommendation we need relevant data to back up the decisions.

Mr. Gude. I am reminded of an incident that occurred last summer when the Department of Housing in the District of Columbia decided there was good vacant land to build housing on at the National Arboretum. I believe this decision came from lack of knowledge and I hope we have disseminated a bit in that case.

Mr. Williams. If I may carry this just one step further to a program that is being currently discussed at the Federal level, that is a program of urban growth, some form of urban growth policy. I would like to relate that back to some of the questions that Mr. Smith had to answer related to the Corps of Engineers. The situation we have faced is that the kind of information that goes into the cost-benefit ratio doesn't include in many, many cases the quality of ecological questions, and decisions and inputs that are necessary.

Now, this is not to put blame on past actions—though I think that is even possible—but to say at least at this point in history we know we are doing harm to the environment and we have the scientific know-how to do better.

What I am concerned about is not only the corps, and the problems we face in redirecting the energies of that agency to further environment quality. I am concerned that if we do pass an urban growth policy in America, and we do it at the Federal level, we begin to direct our attention to where our population could best be handled to help alleviate some of the major problems in our largest metropolitan areas. This is good and is necessary, but if we did it in the way that in the past the corps and other Federal agencies have directed policies and programs for development—if we directed our urban policy program in that way—we would create a disaster that is beyond the scope of what we have done with our dams.

If, for instance, a new community program is included as a part of an urban growth policy—perhaps even a very small part—if that policy didn't take into account the kind of ecological information that is available and ought to be put into decisionmaking about where those new communities ought to be located, we will do what we have done in the past. That is, put communities in the middle of flood plains, in the middle of what are called acquifer recharge areas, meaning we pollute groundwater. In other words, we will make some fairly drastic mistakes.

We can, with an urban growth policy, if the right kind of information is fed into it, make rational decisions about where we locate future growth and avoid pollution. It is important that we do what we are currently doing—that is, consider remedial programs to correct past problems. But I am vitally concerned that we also start a positive program of incentives to be sure we don't create environmental chaos with future actions. I think Government policy, incentives, and spending particularly, can be directed to insure that once we define where urbanization should take place—where it can create the most benefit—we can use Government spending to help this happen particularly at the Federal level.

Mr. Reuss. Thank you, Mr. Williams. And I want to thank all of you gentlemen for the great help you have given our subcommittee this morning.

The subcommittee will now stand in adjournment until 10 o'clock tomorrow morning at this place for the continuation of these hearings.

(Whereupon, at 12:15 p.m., the subcommittee was recessed, to reconvene at 10 a.m., Wednesday, February 4, 1970.)

THE ENVIRONMENTAL DECADE

(Action Proposals for the 1970's)

WEDNESDAY, FEBRUARY 4, 1970

House of Representatives,
Conservation and Natural Resources Subcommittee
of the Committee on Government Operations,
Washington, D.C.

The subcommittee met at 10 a.m., in room 2154, Rayburn House Office Building, Hon. Henry S. Reuss (chairman of the subcommittee) presiding.

Present: Representatives Henry S. Reuss and Floyd V. Hicks.

Staff members present: Phineas Indritz, chief counsel; Josephine Scheiber, research analyst; and J. P. Carlson, minority counsel, Committee on Governmen Operations.

Mr. Reuss. Good morning.

The Subcommittee on Conservation will be in order for a continuation of the hearings on action proposals for the environmental decade of the 1970's.

This morning we are privileged to have before us Dr. Spencer M. Smith, Jr., secretary of the Citizens Committee on Natural Resources; Mr. Sydney Howe, president of the Conservation Foundation; Mrs. Donald E. Clusen, chairman of the Water Resources Committee and vice president of the League of Women Voters of the United States, and Dr. John L. George, president of the Rachel Carson Trust for the Living Environment and associate professor of Wildlife Management, School of Forest Resources, Penn State University.

All of our witnesses have submitted, in accordance with the rule, written statements, and those will be included in full in the record.

Dr. Smith, you appear first on the list. You may proceed to give us the benefit of your advice.

STATEMENT OF DR. SPENCER M. SMITH, JR., SECRETARY, CITIZENS COMMITTEE ON NATURAL RESOURCES

Dr. Smith. Thank you, Mr. Chairman.

By way of identification, I am Spencer M. Smith, Jr., the secretary of the Citizens Committee on Natural Resources. We are a national conservation organization, with offices in Washington, D.C.

If it would suit the convenience of the committee, I will try to summarize my statement on the assumption that the full text will be placed in the record.

Mr. Reuss. That is correct. It will be included in the record in full.

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Mr. SMITH. I might add that I am very pleased to appear before this committee, this distinguished chairman and his staff, because they have been engaged for some time in consideration of problems of the environment. My own interest exceeds some 20 years. Even at that time I was a johnny-come-lately, because our chairman, Dr. Ira Gabrielson, some 30 years before, had been preaching on many of these problems with which we are dealing this morning, and with which the Government now indicates concern.

In order to identify my own professional efforts, they have been in the field of economics—as a college professor, an industrial consultant, Government bureaucrat, and more recently in the field of conservation.

I have had a considerable interest in the way in which economic forces express themselves through public and private institutions.

I should say also that one of the problems facing us today is the 19th and 20th century experience of a big country with almost inexhaustible resources, or at least they seemed so at the time—developing these resources with imaginative techniques. These advances not only were great, though in the 19th century England adapted herself very quickly, but not even England went through the technological developments that the United States experienced.

I think if anybody had asked to consider seriously the results of their economic activities at that time, the question would have been considered frivolous. A few were asking about the anatomy of this progress and the anatomy of this growth, but certainly they were few in number.

I would also like to call attention—because I think it involves several parallels—to the Full Employment Act of 1946, which established the President's Council of Economic Advisers, and directed the Government policies toward full employment.

I am not suggesting that such enactment automatically precluded a serious consideration of environmental problems. In a pragmatic sense, however, there was very little discussion about the environment.

As an economist operating during that period, I can certainly attest to the fact that whether you were in the academic area, the Government, or business in the 1940's and 1950's, you were primarily concerned with growth and expansion.

Any professional economist during this particular period who thought otherwise not only ran the risk of prejudicing his professional advancement, but of incurring the wrath of his peers.

It never bothered me because most of my colleagues never treated this as any great calling, and they didn't bother to drum me out of the corps, because I wasn't that important.

Basically, the consideration of the consequences of producing our standard of living had not been, at that time, fully appreciated. It is cheering to note, and I say this in terms of my previous colleagues and friends, that Dr. Walter Heller, former Chairman of the Council of Economic Advisers in President Kennedy's and President Johnson's administrations, indicated he certainly was not interested in seeing our society become one of effluence. He does not feel that effluence is an inevitable consequence of affluence—that these were incompatible.

Dr. John Kenneth Galbraith recently observed that one caught in a midtown traffic jam, in the squalor of a ghetto neighborhood, breathing foul air after having spent the day on a meager water ration, is not overly comforted by the knowledge that the gross national product increased 9½ percent last year.

The development syndrome has brought a new series of observations such as, "We need a reordering of governmental priorities." In other words, we are spending too much money on the war, and we are spending too much money on other governmental activities.

I don't think it is just governmental priorities that need reordering. We need a reordering of all priorities. I see from the Wall Street Journal that in an 18-month period we spent $100 million on hula hoops a few years ago, and at that time were were spending $25 million on research at all levels of government on how to prevent air pollution.

I notice at the present time we are holding hearings in the other body, I think the phrase is here, on the ability to produce enough electrical energy without damaging the environment. The Joint Committee on Atomic Energy also is concerned about the impact of atomic activities on the environment.

One gets to be a little bit upset when we find out we are spending around $75 to $80 million on the electric toothbrush.

Now, whether this is an appropriate expenditure of funds and resources is open to question. To those of you who feel that you are not able to agitate your own drink at the various cocktail parties in Washington, we now have a battery-driven electric swizzle stick which you can pop out of your pocket and put in your drink in the event that agitating it with an ordinary swizzle stick is a little bit beyond one's capability. We sold $15 million worth of these in 1969, for the man who has everything.

I suggest that perhaps some of these increases in technology may not add to our basic standard of living. By the same token I want to urge upon you the awareness that the sales of such items are included in the gross national product, and are counted also in calculating the rate of growth. It is really questionable as to whether there is any serious incompatibility between someone doing without an electric toothbrush and doing without an electric swizzle stick and spending the savings on a park, water pollution abatement, and so forth.

In 1966, I quoted Mr. Benjamin Linsky, who at that time was a professor of sanitary engineering at West Virginia University.

He made the comment that:

> If you have gained in impression that air pollution problems and troubles are recent, and that air pollution control engineering, science, and technology are new, you have been misled.

He contended further that the studies in Chicago and San Francisco in 1915 essentially established the basic tools for air pollution control.

Also, the Conservation Foundation said in an excellent report in 1963 that air pollution is now a political and social problem far more than a scientific one.

Many of our environmental problems, Mr. Chairman, are in this category. It occurs to me that, as we are running through the lists of paradoxes and confrontations between those things that cause us to have high standards of living but also damage the environment, they are not all technological. In many instances they are sociological, or social, and certainly political. I am not trying to suggest in painting a broad-brush summary here that they all fit into this neat category. They do not, but a distressing number do.

This is an element that is formidable indeed to overcome. We are now beginning to recognize the problems. We do not have the institutions of Government or of private industry with the capacities to implement our solutions and/or decisions to solve these problems.

Let me give you a good example:

The Bureau of Public Roads and the committees that are its counterpart in Congress are not given primarily the task of enhancing the environment. They are given the task primarily of building roads.

The Bureau of Reclamation is not given primarily the task of improving or enhancing the environment. It is given the task of building dams for irrigation, flood control, and a variety of other purposes.

And so it goes.

The institutions that we have reflect the kind of development and technological culture that we have. We are only beginning to establish institutions that are trying to reflect some of the concern that this committee has been dealing with, and that the President dealt with in his state of the Union message.

We are perfectly aware of the fact that the debate is going to be long and that contestations are going to be great. I see no way to shorten it. If we are going through the democratic process—and I assume we are—it involves this long agony of constant attention by the Congress and by the people. If we are going to be successful, we will have to evolve the institutions. We have established a Council of Environmental Advisors, as a first task. I would assume we would follow the Full Employment Act on this parallelism, and establish a Joint Committee on the Environment. We favor the establishment of such a committee because of the problem presented by the consideration of the environment.

All committees have some relationship to the environment. This is analogous to the Employment Act of 1946. There was no single department in the executive branch in which the Council of Economic Advisors could be placed. Also, there was no single committee in which jurisdiction could be given that would deal with total economic policy. The same is true as far as environmental circumstances are concerned.

Everyone in the operating committees must indeed go ahead and tailor his activities to the problems the environment presents. The Council of Environmental Advisors and the Joint Committee on the Environment would serve essentially the same role as the Council of Economic Advisors and the Joint Economic Committee.

Our regulatory agencies in many instances have reflected to a great extent what we would expect them to reflect. While they were established in order to assure the public that private enterprise is going to best serve the public interest, I think the kindest critic applying the kindest standard would say they have been ineffective at best.

A more sharp critic passed another judgment and said the regulatory agencies had the same impact on industries they purport to control as flies capturing the flypaper. Anyone who has testified before the Joint Committee on Atomic Energy or had any confrontation with the Atomic Energy Commission, as such, is not necessarily assured that the consequences of their activities are going to be seriously considered in their impact upon the environment. I shan't take the committee's time further, but I think that just as we finally came to some very definite conclusions regarding unemployment in the agonies of the 1930's, we are about to explode some myths regarding the environment. As to the former, we decided a depression in an industrial society was not an act of God, and we also decided we could do something about it. Finally, we developed a package to do something about it.

As to the environment, we are now in the first stage—in the stage of saying that this need not happen and that this is not an inevitable consequence of a high standard of living.

With proper order and proper consideration, a high standard of living is compatible with a high quality of environment. In fact, they may well not be disassociated one from another. We are pleased and even a little amused at the panic of the opposition, when it takes on the flavor of those who were damned as hysterical and emotional birdwatchers because of their caution in the use of pesticides a few years ago.

As recently as January 29, 1970, the Commercial Appeal, a newspaper in Memphis, Tenn., reported that the president of the American Society of Civil Engineers damned those of us who appear to be, in his words, "hysterical" regarding pollution problems. His commentary was that he was very upset over the fact that we were going to spend vast sums of money which would probably be wasted rather than being used on more critical problems.

Mr. REUSS. Those comments could not have appeared in a more appropriately named newspaper than the Commercial Appeal.

Dr. SMITH. I would assume that this was the proper place for them.

Mr. Chairman, I would request, because this is such an interesting article, that it be placed in the record at this point.

Mr. REUSS. Without objection, the article will be included.

(The article from the Commercial Appeal follows:)

[From the Commercial Appeal, Memphis, Tenn., Jan. 29, 1970]

ENGINEERS' LEADER DECRIES POLLUTION HYSTERIA

(By Jerome Obermark)

Scare tactics and exaggerations by the Nixon administration create hysteria about the seriousness of pollution, Thomas M. Niles, president of the American Society of Civil Engineers, said yesterday.

One of four discussion members, Mr. Niles cited as examples of exaggerations comments made before 1,500 ASCE members at the Sheraton-Peabody Monday by Carl L. Klein, Assistant Secretary of Interior.

Mr. Klein had told the convention, "If we do not reverse the trends brought about by advanced technology and expanding pollution, we may end up burying ourselves in our own wastes."

Mr. Niles said this was a "gross exaggeration."

"Think of the shape we would be in today if the engineers had not been active in treating pollution for the past 40 years," Mr. Niles said.

"It scares me when such emphasis is given to the problems of pollution. It could result in massive outlays of Federal moneys, brought on by public hysteria, and result in wasting vast sums of money that could be better used on other problems, more critical problems, like education and housing."

Another authority, William S. Pollard Jr. of Harland, Bartholomew & Associates, said, "What we are concerned about is hysteria used to produce funds to bring about 'solutions' that are not professionally founded and may result in dissipating the limited funds available."

Plans for pollution control by the Federal Government are not well founded, Mr. Niles indicated. Although the figure presently is $10 billion in the next 5 years, no concrete commitments are given as to what portion will be spent by the Federal Government, by the States, and by industry, he said.

Herman G. Baity, who has served with the World Health Organization, added: "The public is virtually oblivious to a problem until focus is centered upon it. Then we go heels over head to solve it."

Mr. Baity flew here from France yesterday to receive an honorary membership in the 63,000-member society.

"I am not against Nixon. I am against the emotional approach being used to make the people aware of pollution," Mr. Niles said.

Samuel S. Baxter, one of seven members of the National Water Commission to advise the Congress on water resource policy for the Nation, said, "Water supply is not the problem. But, I don't think pollution abatement is possible in 5 years with the expenditure of $20 billion."

He explained that most metropolitan areas have some degree of pollution abatement facilities in existence (Memphis being among those still without). Primary systems remove about 35 percent of the pollutants; secondary systems remove from 60 to 85 percent; and tertiary systems remove 93 percent or more of the pollutants in sewage before dumping it into rivers or streams.

Cost of construction and maintenance of sewage treatment systems rises astronomically as the degree of refinement rises, Mr. Baxter said. And present administration plans call for inclusion and expansion of the tertiary systems, which are extremely expensive.

Both Mr. Niles and Mr. Baxter expressed the hope that the administration would spend more money making primary and secondary treatment systems possible, than for refinement and expansion of sophisticated waste removal systems.

"What is more important * * * killing a few fish, or providing the best education for the Nation's children?" Mr. Baxter asked.

Dr. SMITH. There is another commentary in a different vein, and I would think the committee would be interested in this article. As a result, I would request, if the committee has not already acted in this matter, that the article "Mortgaging the Old Homestead," by the famous British scientist, Lord Ritchie-Calder, be placed in the record at this point.

Mr. REUSS. Without objection, it will be included.

(The article follows:)

[Sports Illustrated, Jan. 30, 1970, pp. 45–51]

MORTGAGING THE OLD HOMESTEAD

(By Lord Ritchie-Calder)

The destruction of the environment, the erosion of the 'quality of life,' has become the foremost issue of the day. Making 'our peace with nature,' said President Nixon in his state of the Union message last week, is 'the great question of the 1970's.' As public awareness increases and indignation mounts, a torrent of words pours forth concerning the necessities and priorities of our environmental dilemma. But nowhere has the issue been faced as succinctly and provocatively as in the following article, written for the current edition of the quarterly 'Foreign Affairs' by the eminent British scientific author and United Nations science adviser, Lord Ritchie-Calder. Though Lord Ritchie-Calder considers some questions that are normally outside the scope of our editorial interest, he deals with others that certainly are not. And one point is clear: if the matters he discusses are not resolved, there will be no sporting life, no leisure life, no contemplative life—perhaps no life at all. 'These [smog, pollution, noise, et cetera] are not the great questions that concern world leaders at summit conferences,' said the President. But Lord Ritchie-Calder, a convinced internationalist, says this is the summit issue, that man's last chance (see cover) lies in planned cooperation between nations at the highest level.

In the belief that this article deserves the widest readership, it is reprinted here in full.—THE EDITORS.

Past civilizations are buried in the graveyards of their own mistakes, but as each died of its greed, its carelessness or its effeteness another took its place. That was because such civilizations took their character from a locality or region. Today ours is a global civilization; it is not bounded by the Tigris and the Euphrates nor even the Hellespont and the Indus; it is the whole world. Its planet has shrunk to a neighborhood round which a man-made satellite can patrol 16 times a day, riding the gravitational fences of man's family estate. It is a community so interdependent that our mistakes are exaggerated on a world scale.

For the first time in history, man has the power of veto over the evolution of his own species through a nuclear holocaust. The overkill is enough to wipe out every man, woman and child on earth, together with our fellow lodgers, the animals, the birds and the insects, and to reduce our planet to a radioactive wilderness. Or the Doomsday Machine could be replaced by the Doomsday Bug. By gene manipulation and man-made mutations, it is possible to produce, or generate, a disease against which there would be no natural immunity; by "generate" is meant that even if the perpetrators inoculated themselves protectively, the disease in spreading round the world could assume a virulence of its own and involve them, too. When a British bacteriologist died of the bug he had invented, a distinguished scientist said, "Thank God he didn't sneeze; he could have started a pandemic against which there would have been no immunity."

Modern man can outboast the Ancients, who in the arrogance of their material achievements built pyramids as the gravestones of their civilizations. We can blast our pyramids into space to orbit through all eternity round a planet which perished by our neglect.

A hundred years ago Claude Bernard, the famous French physiologist, enjoined his colleagues, "True science teaches us to doubt and in ignorance to refrain." What he meant was that the scientist must proceed from one tested foothold to the next (like going into a minefield with a mine detector). Today we are using the biosphere, the living space, as an experimental laboratory. When the mad scientist of fiction blows himself and his laboratory sky-high, that is all right, but when scientists and decision-makers act out of ignorance and pretend that it is knowledge, they are putting the whole world in hazard. Anyway, science at best is not wisdom; it is knowledge, while wisdom is knowledge tempered with judgment. Because of overspecialization, most scientist are disabled from exercising judgments beyond their own sphere.

A classic example was the atomic bomb. It was the physicists' bomb. When the device exploded at Alamogordo on July 16, 1945, and made a notch mark in history from which man's future would be dated, the safebreakers had cracked the lock of the nucleus before the locksmiths knew how it worked. (The evidence of this is the billions of dollars which have been spent since 1945 on gargantuan machines to study the fundamental particles, the components of the nucleus: and they still do not know how they interrelate.)

Prime Minister Clement Attice, who concurred with President Truman's decision to drop the bomb on Hiroshima, later said: "We knew nothing whatever at that time about the genetic effects of an atomic explosion. I knew nothing about fallout and all the rest of what emerged after Hiroshima. As far as I know, President Truman and Winston Churchill knew nothing of those things either, nor did Sir John Anderson, who coordinated research on our side. Whether the scientists directly concerned knew or guessed, I do not know. But if they did, then so far as I am aware, they said nothing of it to those who had to make the decision."

That sounds absurd, since as long before as 1927, Herman J. Muller had been studying the genetic effects of radiation, work for which he was later awarded the Nobel Prize. But it is true that in the whole documentation of the British effort, before it merged in the Manhattan project, there is only one reference to genetic effects—a Medical Research Council minute which was not connected with the bomb they were intending to make; it concerned the possibility that the Germans might, short of the bomb, produce radioactive isotopes as a form of biological warfare. In the Franck report, the most statesmanlike document ever produced by scientists, with its percipience of the military and political consequences of unilateral use of the bomb (presented to Secretary of War Henry L. Stimson even before the test bomb exploded), no reference is made to the biological effects, although one would have supposed that to have been a very powerful argument. The explanation, of course, was that it was the physicists' bomb and military security restricted information and discussion to the bombmakers, which excluded the biologists.

The same kind of breakdown in interdisciplinary consultation was manifest in the subsequent testing of fission and fusion bombs. Categorical assurances were given that the fallout would be confined to the testing area, but the Japanese fishing boat *Lucky Dragon* was "dusted" well outside the predicted range. Then we got the story of radiostrontium. Radiostrontium is an analog of calcium. Therefore in bone-formation an atom of natural strontium can take the place of calcium and the radioactive version can do likewise. For all practical purposes radiostrontium did not exist in the world before 1945; it is a man-made element. Today every young person, anywhere in the world, whose bones were forming during the massive bomb testing in the atmosphere, carries this brand mark of the Atomic Age. The radiostrontium in their bones is medically insignificant, but, if the test ban (belated recognition) had not prevented the escalation of atmospheric testing, it might not have been.

Every young person everywhere was affected, and why? Because those responsible for H-bomb testing miscalculated. They assumed that the upthrust of the H-bomb would punch a hole in the stratosphere and that the gaseous radioactivity would dissipate itself. One of those gases was radioactive krypton, which quickly decays into radiostrontium, which is a particulate. The technicians had been wrongly briefed about the nature of the troposphere, the climatic ceiling which would, they maintained, prevent the fallback. But between the equatorial troposphere and the polar troposphere there is a gap, and the radiostrontium came back through this fanlight into the climatic jet streams. It was swept all around the world to come to earth as radioactive rain, to be deposited on food crops and pastures, to be ingested by animals and to get into milk and into babies and children and adolescents whose growing bones were hungry for calcium or its equivalent strontium, in this case radioactive. Incidentally, radiostrontium was known to the biologists before it "hit the headlines." They had found it in the skin burns of animals exposed on the Nevada testing ranges and they knew its sinister nature as a "bone-seeker." But the authorities clapped security on their work, classified it as "Operation Sunshine" and cynically called the units of radiostrontium "Sunshine Units"—an instance not of ignorance but of deliberate noncommunication.

One beneficial effect of the alarm caused by all this has been that the atoms industry is, bar none, the safest in the world for those working in it. Precautions, now universal, were built into the code of practice from the beginning. Indeed it can be admitted that the safety margins in health and in working conditions are perhaps excessive in the light of experience, but no one would dare to modify them. There can, however, be accidents in which the public assumes the risk. At Windscale, the British atomic center in Cumberland, a reactor burned out. Radioactive fumes escaped from the stacks in spite of the filters. They drifted over the country. Milk was dumped into the sea because radioactive iodine had covered the dairy pastures.

There is the problem of atomic waste disposal, which persists in the peaceful uses as well as in the making of nuclear explosives. Low energy wastes, carefully monitored, can be safely disposed of. Trash, irradiated metals and laboratory waste can be embedded in concrete and dumped in the ocean deeps—although this practice raises some misgivings. But high-level wastes, some with elements the radioactivity of which can persist for hundreds of thousands of years, present prodigious difficulties. There must be "burial grounds" (or, euphemistically, "farms"), the biggest of which is at Hanford, Wash. The Hanford "farm" encloses a stretch of the Columbia River in a tract covering 575 square miles where no one is allowed to live or to trespass.

There, in the 20th-century Giza, it has cost more, much more, to bury live atoms than it cost to entomb the sungod kings of Egypt. The capital outlay runs into hundreds of millions of dollars and the maintenance of the U.S. sepulchers is more than $6 million a year. (Add to that the buried waste of the U.S.S.R., Britain, Canada, France and China, and one can see what it costs to bury live atoms.) And they are very much alive. At Hanford they are kept in million-gallon carbon-steel tanks. Their radioactive vitality keeps the accompanying acids boiling like a witch's cauldron. A cooling system has to be maintained continuously. The vapors from the selfboiling tanks have to be condensed and "scrubbed" (radioactive atoms removed); otherwise a radioactive miasma would escape from the vents. The tanks will not endure as long as the pyramids and certainly not for the hundreds of thousands of years of the long-lived atoms.

The acids and the atomic ferments erode the toughest metal, so the tanks have to be periodically decanted. Another method is to entomb them in disused salt mines. Another is to embed them in ceramics, lock them up in glass beads. Another is what is known as "hydraulic fraction": a hole is drilled into a shale formation (below the subsoil water); liquid is piped down under pressure and causes the shale to split laterally. Hence the atoms in liquid cement can be injected under enormous pressure and spread into the fissures to set like a radioactive sandwich.

This accumulating waste from fission plants will persist until the promise, still far from fulfilled, of peaceful thermonuclear power comes about. With the multiplication of power reactors, the wastes will increase. It is calculated that by the year 2000, the number of six-ton nuclear "hearses" in transit to "burial grounds" at any given time on the highways of the United States will be well over 3,000 and the amount of radioactive products will be about a billion curies, which is a mighty lot of curies to be roaming around a populated country.

The alarming possibilities were well illustrated by the incident at Palomares on the coast of Spain, when there occurred a collision of a refueling aircraft with a U.S. nuclear bomber on "live" mission. The bombs were scattered. There was no explosion, but radioactive materials broke loose and the contaminated beaches and farm soil had to be scooped up and taken to the United States for burial.

Imagine what would have happened if the *Torrey Canyon*, the giant tanker which was wrecked off the Scilly Isles, had been nuclear-powered. Some experts make comforting noises and say that the reactors would have "closed down," but the *Torrey Canyon* was a wreck and the Palomares incident showed what happens when radioactive materials break loose. All those oil-polluted beaches of southwest England and the coast of Brittany would have had to be scooped up for nuclear burial.

The *Torrey Canyon* is a nightmarish example of progress for its own sake. The bigger the tanker, the cheaper the freightage, which is supposed to be progress. This ship was built at Newport News, Va., in 1959 for the Union Oil Co.; it was a giant for the time—810 feet long and 104 feet beam—but, 5 years later, that was not big enough. She was taken to Japan to be "stretched." The ship was cut in half amidship and a mid-body section inserted. With a new bow, this made her 974 feet long, and her beam was extended 21 feet. She could carry 850,000 barrels of oil, twice her original capacity.

Built for Union Oil, she was "owned" by the Barracuda Tanker Corp., the head office of which is a filing cabinet in Hamilton, Bermuda. She was registered under the Liberian flag of convenience and her captain and crew were Italians recruited in Genoa. Just to complicate the international tangle, she was under charter to the British Petroleum Tanker Co. to bring 118,000 tons of crude oil from Kuwait to Milford Haven in Wales, via the Cape of Good Hope. Approaching Lands End, the Italian captain was informed that if he did not reach Milford Haven by 11 p.m. Saturday night he would miss high water and would not be able to enter the harbor for another 5 days, which would have annoyed his employers. He took a shortcut, setting course between Seven Stones rocks and the Scilly Isles, and he finished up on Pollard Rock, in an area where no ship of that size should ever have been.

Her ruptured tanks began to vomit oil and great slicks appeared over the sea in the direction of the Cornish holiday beaches. A Dutch tug made a dash for the stranded ship, gambling on the salvage money. (Where the salvaged ship could have been taken one cannot imagine, since no place would offer harborage to a leaking tanker.) After delays and a death in the futile salvage effort, the British Government moved in with the navy, the air force and, on the beaches, the army. They tried to set fire to the floating oil which, of course, would not volatilize. They covered the slicks with detergents (supplied at a price by the oil companies), and then the bombers moved in to try to cut the deck and, with incendiaries, to set fire to the remaining oil in the tanks. Finally the ship foundered and divers confirmed that the oil had been effectively consumed.

Nevertheless the result was havoc. All measures had had to be improvised; 12,000 tons of detergent went into the sea. Later marine biologists found that the cure had been worse than the complaint. The oil was disastrous for seabirds, but marine organic life was destroyed by the detergents. By arduous physical efforts, with bulldozers and flamethrowers and, again, more detergents, the beaches were cleaned up for the holiday-makers. Northerly winds swept the oil slicks down Channel to the French coast with even more serious consequences, particularly to the valuable shellfish industry. With even bigger tankers being launched, this affair is a portentous warning.

Two years after *Torrey Canyon*, an off-shore oil rig erupted in the Santa Barbara Channel. The disaster to wildlife in this area, which has island nature reserves and is on the migratory route of whales, seals and seabirds, was a repetition of the *Torrey Canyon* oil spill. And the operator of the lethal oil rig was Union Oil.

Another piece of stupidity shows how much we are at the mercy of ignorant men pretending to be knowledgeable. During the International Geophysical Year, 1957–58, the Van Allen Belt was discovered. This is an area of magnetic phenomena. Immediately it was decided to explode a nuclear bomb in the belt to see whether an artificial aurora could be produced. The colorful draperies and luminous skirts of the aurora borealis are caused by the drawing in of cosmic particles through the rare gases of the upper atmosphere—ionization it is called; it is like passing electrons through the vacuum tubes of our familiar fluorescent lighting. The name "Rainbow Bomb" was given it in anticipation of the display it was expected to produce. Every eminent scientist in the field of cosmology, radio astronomy or physics of the atmosphere protested at this irresponsible tampering with a system which we did not understand. And, typical of the casual attitude toward this kind of thing, the Prime Minister of the day, answering protests in the House of Commons that called on him to intervene with the Americans, asked what all the fuss was about. After all, they hadn't known that the Van Allen Belt even existed a year before. This was the cosmic equivalent of Chamberlain's remarks about Czechoslovakia, at the time of Munich, about that distant country of which we knew so little. They exploded the bomb. They got their pyrotechnics and we still do not know the cost we may have to pay for this artificial magnetic disturbance.

In the same way we can look with misgivings on those tracks—the white tails of the jets that are introducing into our climatic system new factors, the effects of which are immeasurable. Formation of rain clouds depends upon water vapor having a nucleus on which to form. That is how artificial precipitation is introduced—the so-called rainmaking. So the jets, crisscrossing the weather system, playing noughts and crosses with it, can produce a man-made change.

In the longer term we can foresee even more drastic effects from man's unthinking operation. At the United Nations' Science and Technology Conference in Geneva in 1963 we took stock of the effects of industrialization on our total environment thus far. The atmosphere is not only the air which humans, animals and plants breathe, it is also the envelope that protects living things from harmful radiation from the sun and outer space. It is also the medium of climate, the winds and the rain. Those are inseparable from the hydrosphere—the oceans, covering seven-tenths of the globe, with their current and extraordinary rates of evaporation, the biosphere, with its trees and their transpiration; and in terms of human activities, the minerals mined from the lithosphere, the rock crust. Millions of years ago the sun encouraged the growth of the primeval forests, which became our coal, and the plant growth of the seas, which became our oil. Those fossil fuels, locked away for eons of time, are extracted by man and put back into the atmosphere from the chimney stacks and the exhaust pipes of modern engineering. About 6 billion tons of carbon are mixed with the atmosphere annually. During the past century, in the process of industrialization, with its release of carbon by the burning of fossil fuels, more than 400 billion tons of carbon have been artificially introduced into the atmosphere. The concentration in the air we breathe has been increased by approximately 10 percent, and if all the known reserves of coal and oil were burned at once the concentration would be 10 times greater.

This is something more than a public health problem, more than a question of what goes into the lungs of an individual, more than a question of smog. The carbon cycle in nature is a self-adjusting mechanism. Carbon dioxide is, of course, indispensable for plants and is, therefore, a source of life, but there is a balance which is maintained by excess carbon being absorbed by the seas. The excess is now taxing this absorption, and it can seriously disturb the heat balance of the earth because of what is known as the "greenhouse effect." A greenhouse lets in the sun's rays but retains the heat. Carbon dioxide, as a transparent diffusion, does likewise. It keeps the heat at the surface of the earth and in excess modifies the climate.

It has been estimated that, at the present rate of increase, the mean annual temperature all over the world might increase by 3.6 degrees centigrade in the next 40 to 50 years. The experts may argue about the time factor and even about the effects, but certain things are apparent, not only in the industrialized northern hemisphere but in the southern hemisphere also. The north-polar ice cap is thinning and shrinking. The seas, with their blanket of carbon dioxide, are changing their temperature, with the result that marine plant life is increasing and is transpiring more carbon dioxide. As a result of the combination, fish are migrating, changing even their latitudes. On land the snow line is retreating and glaciers are melting. In Scandinavia, land which was perennially under snow and ice is thawing, and arrowheads of more than 1,000 years ago, when the black soils were last exposed, have been found. The melting of sea ice will not affect the sea level, because the volume of floating ice is the same as the water it displaces, but the melting of ice caps or glaciers, in which the water is locked up, will introduce additional water to the sea and raise the level. Rivers originating in glaciers and permanent snow fields will increase their flow; and if ice dams, such as those in the Himalayas, break, the results in flooding may be catastrophic. In this process the patterns of rainfall will change, with increased precipitation in some areas and the possibilty of aridity in now fertile regions. One would be well advised not to take 99-year leases on properties at present sea level.

At that same conference, there was a sobering reminder of mistakes which can be writ large, from the very best intentions. In the Indus Valley in West Pakistan, the population is increasing at the rate of 10 more mouths to be fed every 5 minutes. In that same 5 minutes in that same place, an acre of land is being lost through waterlogging and salinity. This is the largest irrigated region in the world. Twenty-three million acres are artificially watered by canals. The Indus and its tributaries, the Jhelum, the Chenab, the Ravi, the Beas and the Sutlej, created the alluvial plains of the Punjab and the Sind. In the 19th century, the British began a big program of farm development in lands which were fertile but had low rainfall. Barrages and distribution canals were constructed. One thing which, for economy's sake, was not done was to line the canals. In the early days, this genuinely did not matter. The water was being spread from the Indus into a thirsty plain and if it soaked in so much the better. The system also depended on what is called "inland delta drainage," that is to say, the water spreads out like a delta and then drains itself back into the river. After independence, Pakistan, with external aid, started vigorously to extend the Indus irrigation. The experts all said the soil was good and would produce abundantly once it got the distributed water. There were plenty of experts, but they all overlooked one thing—the hydrological imperatives. The incline from Lahore to the Rann of Kutch—700 miles—is a foot a mile, a quite inadequate drainage gradient. So as more and more barrages and more and more lateral canals were built the water was not draining back into the Indus. Some 40 percent of the water in the unlined canals seeped underground, and in a network of 40,000 miles of canals that is a lot of water. The result was that the water table rose. Low-lying areas became waterlogged, drowning the roots of the crops. In other areas the water crept upward, leaching salts that accumulated in the surface layers, poisoning the crops. At the same time the irrigation regime, which used just 1½ inches of water a year in the fields, did not sluice out those salts but added, through evaporation, its own salts. The result was tragically spectacular. In flying over large tracts of this area, one would imagine that it was an Arctic landscape because the white crust of salt glistens like snow.

The situation was deteriorating so rapidly that President Ayub appealed in person to President Kennedy, who sent out a high-powered mission which encompassed 20 disciplines. This was backed by the computers at Harvard. The answers were pretty grim. It would take 20 years and $2 billion to repair the damage—more than it cost to create the installations that did the damage. It would mean using vertical drainage to bring up the water and use it for irrigation, and also to sluice out the salt in the surface soil. If those 20 scientific disciplines had been brought together in the first instance, it would not have happened.

One more instance of the far-flung consequences of man's localized mistakes: no insecticides or pesticides have ever been allowed into the continent of Antarctica. Yet they have been found in the fauna along the northern coasts. They have come almost certainly from the northern hemisphere, carried from the rivers of the farm States into the currents sweeping south. In November 1969, the U.S. Government decided to "phase out" the use of DDT.

Pollution is a crime compounded of ignorance and avarice. The great achievements of *Homo sapiens* become the disaster-ridden blunders of unthinking man—poisoned rivers and dead lakes, polluted with the effluents of industries which give something called "prosperity" at the expense of posterity. Rivers are treated like sewers and lakes like cesspools. These natural systems—and they are living systems—have struggled hard. The benevolent microorganisms which cope with reasonable amounts of organic matter have been destroyed by mineral detergents. Witness our foaming streams. Lake Erie did its best to provide the oxygen to neutralize the pickling acids of the great steelworks. But it could not contend. It lost its oxygen in the battle. Its once rich commercial fishing industry died and its revitalizing microorganic life gave place to anaerobic organisms which do not need oxygen but give off foul smells, the mortuary smells of dead water. As one Erie industrialist retorted, "It's not our effluent; it's those damned dead fish."

We have had the freedom from hunger campaign; presently we shall need a freedom from thirst campaign. If the International Hydrological Decade does not bring us to our senses, we will face a desperate situation. Of course it is bound up with the increasing population, but also with the extravagances of the technologies which claim that they are serving that population. There is a competition between the water needs of the land which has to feed the increasing population, and the domestic and industrial needs of that population. The theoretical minimum to sustain living standards is about 300 gallons a day per person. This is the approximate amount of water needed to produce grain for 2½ pounds of bread, but a diet of 2 pounds of bread and 1 pound of beef would require about 2,500 gallons. And that is nothing compared with the gluttonous requirements of steel-making, paper-making, and the chemical industry.

Water—just H_2O—is as indispensable as food. To die of hunger one needs more than 15 days. To die of thirst one needs only 3. Yet we are squandering, polluting and destroying water. In Los Angeles and neighboring Southern California, a thousand times more water is being consumed than is being precipitated in the locality. They have preempted the water of neighboring States. They are piping it from Northern California, and there is a plan to pipe it all the way from Canada's Northwest Territory, from the Mackenzie and the Liard, which flow northward to the Arctic Ocean, to turn them back into deserts.

Always and everywhere we come back to the problem of population—more people to make more mistakes, more people to be the victims of the mistakes of others, more people to suffer hell upon earth. It is appalling to hear people complacently talking about the population explosion as though it belonged to the future, or world hunger as though it were threatening, when hundreds of millions can testify that it is already here—swear it with panting breath.

We know to the exact countdown second when the nuclear explosion took place—5:30 a.m., July 16, 1945, when the first device went off in the desert of Alamogordo, N. Mex. The fuse of the population explosion had been lit 10 years earlier—February 1935. On that day a girl called Hildegarde was dying of generalized septicemia. She had pricked her finger with a sewing needle and the infection had run amok. The doctors could not save her. Her desperate father injected a red dye into her body. Her father was Gerhard Domagk. The red dye was prontosil, which he, a pharmaceutical chemist, had produced and had successfully used on mice lethally infected with streptococci, but never before on a human. Prontosil was the first of the sulfa drugs—chemotherapeutics—which could attack the germ within the living body. Thus was prepared the way for the rediscovery of penicillin—rediscovery because, although Fleming had discovered it in 1928, it had been ignored; neither he nor anybody else had seen its supreme virtue of attacking germs within the living body. That is the operative phrase, for while medical science and the medical profession had used antiseptics for surface wounds and sores, they were always labeled "Poison, not to be taken internally." The sulfa drugs had shown that it was possible to attack specific germs within the living body and had changed this attitude. So when Chain and Florey looked again at Fleming's penicillin in 1938, they were seeing it in the light of the experience of the sulfas.

A new era of disease-fighting had begun—the sulfas, the antibotics, DDT insecticides. Doctors could now attack a whole range of invisible enemies. They could master the old killer diseases. They proved it during the war, and when the war ended there were not only stockpiles of the drugs, there were tooled-up factories to produce them. So, to prevent the spread of the deadly epidemics which follow wars, the supplies were made available to the war-ravaged countries with their displaced persons, and then to the developing countries. Their indigenous infections and contagions and insect-borne diseases were checked.

Almost symbolically, the first great clinical use of prontosil had been in dealing with puerperal sepsis, childbed fever. It had spectacularly saved mothers' lives in Queen Charlotte's Hospital, London. Now its successors took up the story. Fewer mothers died in childbirth, to live and have more babies. Fewer infants died, fewer toddlers, fewer adolescents. They lived to marry and have children. Older people were not killed off by, for instance, malaria. The average life-span increased.

Professor Kingsley Davis of the University of California at Berkeley, the authority on urban development, has presented a hair-raising picture from his survey of the world's cities. He has shown that 38 percent of the world's population is already living in what are defined as urban places. More than one-fifth of the world's population is living in cities of 100,000 or more. And more than one-tenth of the world's population is now living in cities of a million or more inhabitants. In 1968, 375 million people were living in million-and-over cities. The proportions are changing so quickly that on present trends it would take only 16 years for half the world's population to be living in cities and only 55 years for it to reach 100 percent.

Within the lifetime of a child born today, Kingsley Davis foresees, on present trends of population increase, 15 billion people to be fed and housed—nearly five times as many as now. The whole human species would be living in cities of a million and over inhabitants, and—wait for it—the biggest city would have 1.3 billion inhabitants. That means 186 times as many as there are in Greater London.

For years the Greek architect Doxiadis has been warning us about such prospects. In his Ecumenopolis—World City—one urban area would ooze into the next, like confluent ulcers. The east side of World City would have as its High Street the Eurasian Highway stretching from Glasgow to Bangkok, with the channel tunnel as its subway and a built-up area all the way. On the west side of World City, divided not by tracks but by the Atlantic, the pattern is already emerging, or rather, merging. Americans already talk about Boswash, the urban development of a built-up area stretching from Boston to Washington; and on the west coast, apart from Los Angeles sprawling into the desert, the realtors are already slurring one city into another all along the Pacific coast from the Mexican border to San Francisco. We don't need a crystal ball to foresee what Davis and Doxiadis are predicting: we can already see it through smog-covered spectacles. A blind man can smell what is coming.

The danger of prediction is that experts and men of affairs are likely to plan for the predicted trends and confirm these trends. "Prognosis" is something different from "Prediction." An intelligent doctor, having diagnosed your symptoms and examined your condition, does not say (except in novelettes), "You have 6 months to live." An intelligent doctor says, "Frankly, your condition is serious. Unless you do so-and-so, and I do so-and-so, it is bound to deteriorate." The operative phrase is "do so-and-so." We don't have to plan for trends; if they are socially undesirable our duty is to plan away from them, to treat the symptoms before they become malignant.

We have to do this on the local, the national, and the international scale, through intergovernmental action, because there are no frontiers in present-day pollution and destruction of the biosphere. Mankind shares a common habitat. We have mortgaged the old homestead and nature is liable to foreclose.

Dr. SMITH. I want to say in closing, the Citizens Committee on Natural Resources, which was organized in 1954, certainly wishes to commend not only the chairman, but members of this committee, for their vigorous pursuit of a better environment, and we certainly seek to pledge to them our very best efforts to aid and abet the purposes and goals that you people have announced here.

Thank you very much.

(Dr. Smith's prepared statement follows:)

PREPARED STATEMENT OF DR. SPENCER M. SMITH, JR., SECRETARY, CITIZENS COMMITTEE ON NATURAL RESOURCES

Mr. Chairman, members of the committee: I am Dr. Spencer M. Smith, Jr., secretary of the Citizens Committee on Natural Resources, a national conservation organization with offices in Washington, D.C.

The attention of this committee and especially its distinguished chairman need not be engaged as to the longevity of concern that many have had about the impact of our culture upon the environment. My own interest exceeds 20 years and

I was a Johnny-come-lately at that time, especially when compared to Dr. Ira N. Gabrielson, chairman of our committee and long-time advocate of the effect of man's activity upon our resources. His prophetic commentaries have continued to amaze me as have few men of our time.

My own professional efforts have been in the field of economics, as a college professor, industry consultant, Government bureaucrat, and most recently in the area of conservation. Always I have had a considerable interest in the manner by which economic forces express themselves through private and public institutions. It appears necessary for me to so identify myself in order that you may better understand the perspective in which I view environmental problems or, if you prefer, to better understand my prejudices in such problems.

It has been said that no country in history was so wedded at the very outset of its birth to the concept of development. The rapidity with which our technological expertise came about and the concomitant rapid rise in our standard of living has focused our life and attention on the great achievement of transferring nature's endowment into modern comforts. In the 19th century, and most of the 20th, our problem has been development. Any suggestion that serious attention be given to the consequences of that development would have been assessed as a frivolity that no prudent man could tolerate in the deadly serious business of feeding millions of people and providing sufficient power for a young industry. It is true that distinguished leaders of the past have sought to examine the nature of this development, not with an interest in arresting it, but with an eye to applying direction and assurance that the long-run aspects would continue to be productive. Theodore Roosevelt and many others were pioneers in this effort and generally have been grouped under the heading of conservationists.

To say that development has been uppermost in the minds of our predecessors is to understate the driving force of this concept and the fact that it has become an integral part of our culture. We may not be developing a physical frontier in the sense that we did in the 18th and 19th centuries, but we have substituted therefor an emotional frontier which we nurture with great care.

If one feels that the urge toward development has been restrained and that our present actions are tempered with greater care, let him be reminded of the Full Employment Act of 1946. This act established the President's Council of Economic Advisors and directs Government policies toward the end of full employment. This in and of itself need not result in unrestrained development but in a dramatic sense it did little to impart a sense of caution to economic expansion. On the contrary, the most paramount consideration in economic analysis by academic, Government, and/or business economists of the 1940's, 1950's was that of growth.

Any professional economist during this period who had not published or otherwise shown concern for the economic growth rate, ran the risk of prejudicing his professional advancement and of having his capabilities down-graded by his peers. A few of us were concerned about the anatomy of such growth and about the social cost or price paid to achieve it.

If I may be pardoned a personal reference, for most of my adult life I have been either in training for or in the practice of a professional economist. Nothing in this field of endeavor suggests that the consequences of the development of goods and services should not be considered and it is true that such a consideration can be placed in the economist's scheme of things without conflicting with any basic tenet. As a practical matter, however, the major thrust of this profession is employment and economic expansion. College sophomores have been plagued for years by the definition of economics which states: "Economics is the science that deals with man's efforts to satisfy his unlimited wants by using the scarce transferable resources of nature."

Some of my colleagues in the economic profession have never treated my interest in attempting to assess the social costs of development as a high professional calling. They can tolerate my concern for these problems but if such concern leads to the suggestion that certain kinds of development be slowed or temporarily interrupted until such social costs could be lessened, then their impatience becomes monumental. Quite often this is tantamount to being drummed out of the profession but it is seldom worth the effort. It has generally been sufficient for them to point out that it is not as if one of significant stature had deserted their professional ranks and they continue secure in their knowledge that no modification of their efforts is required.

One is encouraged, however, to have such a noted economist as Dr. Walter W. Heller, professor of economics at the University of Minnesota and former chairman of the President's Council of Economic Advisors, state: "I am as deeply concerned with keeping our society from becoming one of effluence as I am in keeping it affluent."

Also, Prof. John K. Galbraith recently observed that one caught in a midtown traffic jam in the squalor of a ghetto neighborhood, breathing foul air after having spent the day on a meager water ration, is not overly comforted by the knowledge that the Gross National Product increased 9½ percent last year.

The "development" syndrome has brought a new series of observations such as, "we need a reordering of governmental priorities." This commentary is repeated by so many, so often, that it is becoming a modern cliche. The first question that should be posed is why just a reordering of "governmental priorities."

Perhaps we have come full circle if concern for the consequences of development was a frivolity of the past, then perhaps the development of some goods and services today is not only frivolous but irrational. The genius of modern industry produced and sold $100 million worth of hula-hoops within an 18-month period—about four times the amount spent on air pollution for the same period. In one business publication the shortage of engineers was decried, and in the same publication pride was expressed in the increased sales of the electric toothbrush, a product which no affluent society can do without.

To show that there are few limits to engineering genius, which is equaled only by their advertising compatriots, we have another breakthrough to report—the electric or battery-driven swizzle stick. With this perhaps we may relieve the final agony by bringing relief to our pioneer in his struggle to agitate his own drink. This, if the ecomiums of the chamber of commerce may be believed, may rank with putting the well in the adobe frontier home. Yes, the old frontier is gone and the abilities that sped its passing have become private faults replacing their once virtues. We seem to be unable to rid ourselves of the notion that whatever the problem, a proper appreciation of technology is all that is required. Perhaps it was this childlike faith that was dealt such a blow when on the occasion of the 3d National Conference on Air Pollution, held in Washington, D.C., on December 12 to 14, 1966. I quoted Benjamin Linsky, professor of sanitary engineering in air pollution control at West Virginia University, regarding the comments that he had made to the Thirty-first North American Wildlife and Natural Resources Conference on March 14, 1966. He said,

"If you have gained an impression that air pollution problems and troubles are recent, and that air pollution control engineering, science and technology are new, you have been misled."

He contended further that the studies in Chicago and San Francisco in 1915 essentially established the basic tools for air pollution control. In addition to citing Professor Linsky's observation, I quoted further the results of a study in 1963 by the Conservation Foundation concluding: "Air pollution is now a political and social problem far more than a scientific one."

I was not prepared for the challenge that the first of these comments received. The nature of criticism, however, was primarily a recitation of the need for many new techniques for detection of air pollution as well as those required for better remedial programs. In addition, there was the insistence by many that a variety of the present known devices soon would be obsolete. I pressed the major thrust of my argument, however, and even the most persistent critics qualified their rejoinder by stating that our ineffective policy was influenced by inadequate technical developments but in an ancillary sense. The only real modification I have come to make in my quotation of Professor Linsky is to emphasize more the word "essentially" as to the techniques being in existence for a good program of air pollution prevention.

I for one would be pleased if our problems were technical in character rather than social or political. Our ability to solve technical and scientific problems appears superior to our ability to solve social ones.

It should surprise no one that with a culture of development, technological brilliance and achievement, which produce annually the highest consumption of goods and services any society has achieved to date, would establish institutions, both government and private, that reflect a culture.

Even our regulatory agencies, while established to assure the public that private enterprise would best serve the public interest have been ineffectual by the kindest standard any one could apply. Or as a more sharp critic has phrased it * * * "the regulatory agencies impact upon the industries they purport to control is like the flies capturing the fly paper."

It is impossible to effect a neat cataloguing which assigns the role of devils and angels, in fixing the blame for deteriorating environment. There is sufficient ammunition for both sides to support the proposition that the private individual businessman in pursuit of profit is an angel or a devil. On the one hand he is is seen as responsible for the economic success and well-being of the country and should not be penalized for his efforts. On the other hand, he is viewed as highly irresponsible in contaminating the water, air, and in the expedient exploitation of other resources in order to increase his profit margin. The argument continues with particular businesses showing the additional cost incurred to abate air pollution while others point to the fact that the costs were incurred as a direct result of court action or fear of Federal action. The basic difficulty is not assessing blame, though it takes up most of the time and argument. The difficulty is that private individuals and private businesses rationally pursuing their own policies come into conflict with the interests of the public at large.

The businessman does not understand how he became a monster threatening the health of the community in just a few short years. Only recently he may have been hailed and feted as a man of courage and ability, which led to the location of his business in the community. As a consequence, he feels perfectly justified in using all of the devices to protect his property in order that he will not be forced to incur additional costs, which in turn may affect adversely his competitive position.

Commercial enterprises both large and small have great abilities to resist Government regulations. They charge the Government interests with trying to swell their bureaucracy, take over private functions and, if it is the Federal Government, the usurpation of States' rights. Businesses are often stronger in supporting States rights than anyone else, primarily because States are notoriously ineffective regulators of business enterprise.

The public at large is seriously inhibited by the formidable campaign by commercial enterprise, which appears to have everything going for it. Action is postponed as public sentiment increases. Investigation upon investigation is made to determine the exact nature of the problem. The plea for more information continues and if the policy pursued by industry and commercial enterprise is sufficiently deleterious to community health and well-being, there comes a time when action is taken. Unfortunately, by that time the problem is often so acute that the cost of achieving a full remedy is so staggering, the process of initiating such a program is again frustrated. This is especially true when dealing with natural resources, since the early effects may be abstruse and even the cumulative problems may be subtle and not immediately understood.

Because of the great emphasis in the private sector of our economy upon development, the tools and techniques for assessing cost and benefits have been developed to great precision. Also, the institutions, through which these forces move and are measured, are understood. In addition, institutions, such as the marketplace, are highly responsive mechanisms, which regularly approve and disapprove quickly and determine the costs and benefits just as quickly. A housewife does not have to write a letter as to why she did not like the lettuce at the supermarket to rectify the situation. All she has to do is not buy lettuce and if a sufficient number act in this fashion the message of disapproval is communicated immediately.

Alas, the public sector is dealing with phenomena of which is not quantifiable by the latest and best techniques. In those rare instances where better assessments can be made, there is no institution to communicate the decision of the public in a quick and accurate fashion, as exists in a marketplace, imperfect as it may be. Citizens cannot buy clean air and pure water in a supermarket or at the automobile showroom. Their action must go through a far more laborious and inexact procedure in order to find approval or disapproval.

In short, we are just beginning to formulate institutions that can give expression to the multivariate forces that impinge upon the environment. The Council of Environmental Advisers is a starting point. It is a good augury for the future but not a final answer.

The Full Employment Act of 1946 revealed a number of changes in our thinking in addition to implementing these changes by establishing the necessary institutions.

First, we decided that depression in an industrial society was not an act of God to be borne with Job-like patience. Second, Government institutions, as well as others, could do something about it. Third, since this concern could not be "packaged" in one department or one committee of Congress because economic decisions that had an impact on employment occurred through government, a Council of Economic Advisers to the President was established and the Joint Committee on the President's Economic Report was established in the Congress.

The objective of the Employment Act, "full employment without inflation," has not been achieved with perfection. The Government and others have erred in one direction or the other, but the act must be regarded as an important success.

Commercial enterprises and Government agencies whose fate seems intertwined with these enterprises have often defeated specific measures by a variety of means. Overriding objections with "you can't stop progress" and using the many techniques so well known to all have often frustrated efforts to restrain or diminish adverse environmental impacts. Today environmental impact is being challenged as never before. It is therefore predictable that the opposition's protests are reaching a strident note.

An example of this type of rebuttal was reported in the "Commercial Appeal," Memphis, Tenn., January 29, 1970, wherein Mr. Thomas M. Niles, president of the American Society of Civil Engineers, stated:

"It scares me when such emphasis is given to the problems of pollution. It could result in massive outlays of Federal moneys, brought on by public hysteria, and result in wasting vast sums of money that could be better used on other problems, more critical problems, like education and housing."

Also, Mr. Samuel S. Baxter, member of the National Water Commission, after stating that pollution abatement was probably not possible in 5 years with an expenditure of $20 billion, urged that secondary sewage treatment plants take precedent over refinements of waste removal systems. "What is more important * * * killing a few fish, or providing the best education for the Nation's children?" Mr. Baxter asked.

Mr. Chairman, I ask that the entire article covering the engineering conference as reported by the "Commercial Appeal" be placed in the record at this point.

(NOTE.—The article referred to is printed at pp. 103–104.)

Conflicts will continue to abound. Many bearing upon the question whether an increasing standard of living (here interpreted as the consumption of goods and services) is compatible with a high quality of environment. While I continue to believe our basic standard of living will increase significantly and can do so without deleterious effects upon environment, it is obvious that we will have to spend more of our national income collectively and we will have to redefine what we mean by "standard of living." Though the electric tooth brush and electric swizzle stick constitute a part of the Gross National Product, provide employment, taxes, etc., is this to be likened to a community park?

Paradoxes will continue to flourish and laws and institutions must develop in order to obviate them to the best of our ability. Federal grants-in-aid are available for State recreation programs but the States may save an area or create a park only to find a highway scheduled to run through such areas with the financing accomplished by another Federal grants-in-aid program.

The critical question is not how we fashion the environment to be consistent with our economic largess but how we tailor and otherwise effect an economic and cultural system comparable with our environment. This is not a choice that is ours to make if we desire long term survival.

The concern over our environment is gratifying. Even the panic of the opposition takes on a flavor of those who roundly damned the "hysterical and emotional bird watchers who said that we had something to fear from pesticides."

One good and able conservationist made an observation that may affect more of us than we will admit when he said: "We have been saying for years that this may be our last chance but now we are beginning to believe it ourselves."

With so much being written and discussed regarding the environment, it is impossible to present a definitive document to the committee. An excellent appraisal of the quality of life by Lord Ritchie-Calder (Mortgaging The Old Homestead), the eminent British scientist, appears in the current edition of the quarterly, "Foreign Affairs" and is reprinted in the current "Sports Illustrated." If this article has not yet been made a part of the record, I respectively request that it be included.

(NOTE.—The article referred to is printed at pp. 104–111.)

The Citizens Committee on Natural Resources, which has been organized since 1954, wishes to commend the chairman and members of this committee for their vigorous pursuit of a better environment and to pledge to them that we will exert our best efforts to aid and abet their purposes and goals.

I thank the committee for this opportunity of presenting this statement.

Mr. Reuss. Thank you, Dr. Smith.

We will next hear from Mrs. Donald E. Clusen, representing the League of Women Voters, which organization has been in the forefront of the environmental fight for many years.

STATEMENT OF MRS. DONALD E. CLUSEN, VICE PRESIDENT, LEAGUE OF WOMEN VOTERS OF THE UNITED STATES

Mrs. Clusen. Thank you, Mr. Chairman.

For the record I am Mrs. Donald Clusen of Green Bay, Wis. I am vice president of the League of Women Voters of the United States and chairman of the League's work on the environment. We appreciate the opportunity to appear before this subcommittee to comment on action proposals to improve and protect our physical environment in the 1970's.

We find that the interested public is disgusted at this point with the blur of proposals for reorganization, preemption, nondegradation, standard setting, plans for implementation and demonstration projects because people know that this country has the ability to improve the condition of its air and water and the management of land. We think that people will not be satisfied with the rhetoric which is currently going on about environmental quality, and that instead they want results they can see.

The members of my organization are under no illusion that it will be easy to achieve the kind of movement the public wants. The scope of the questions posed by this committee shows the complexity of reordering the Government programs. Since the League does not pretend to the omniscience necessary for a broad gage response to the questions listed, I shall confine my comments to conclusions arising from the League's 14-year experience with water resources. Most of my comments will be concentrated on the financing and enforcement programs carried on by the Federal Government.

1. The League of Women Voters expects to see—during the present congressional session—consideration of all aspects of the Federal grant program for municipal sewage facility construction. Although we have long been aware of weaknesses in the present program, we continue to support the principle of Federal incentive grants for this purpose. We think it unwise to rush into change of one part of the program. Complete redesign should be undertaken in the light of the experience of the last decade and the goal for the decade of the 1970's. Since such redesign cannot be swiftly accomplished, we think the present program should be continued to the end of its authorization.

The first step in continuing the present program should be to make the $800 million appropriated for fiscal 1970 available to the States. We are glad to hear that President Nixon intends that the entire sum be released to the FWPCA for allocation by the end of this fiscal year. The second step is to seek appropriation of the full $1.25 billion authorized for the program in fiscal 1971. We, along with others, expect to work for full appropriation.

Turning now to changes that are needed when a new program is designed, in our opinion Federal, State, and local governments have each put too little money into construction of sewage treatment plants and intercepter sewers. Governments at each level have held back claiming that a greater commitment from one of the other levels was necessary. More money must be invested and the elements encouraging procrastination must be circumvented if water quality is to improve.

(*a*) Early in the program localities began to hang back, waiting for their turn to share in the Federal program. We find the idea widespread that every jurisdiction is entitled to 50 percent Federal aid for treatment plant construction. Anyone who knows the legislative history of this knows this is not the intent. So we think there is a need for public education on this point. Everyone can understand that delay has made construction more expensive—in cost of materials, wages, land, and interest on bonds. Whatever the rules of the game are to be in the future, it is important that they be made clear and be adhered to.

(*b*) The sewage facility construction program cannot be divorced from sewer construction and from the heavy costs of other services which municipalities furnish. There is no getting away from the fact that many benefits of sewage treatment accrue to areas downstream rather than to taxpayers of the district building the facility. Although jurisdictions able, with some sacrifice, to undertake pollution abatement programs should do so promptly, some inducement is needed to overcome the tendency to use available funds for programs of more direct service to a jurisdiction's taxpayers. We know of no inducements save financial aid from State and Federal levels plus strong enforcement of State water quality standards.

(*c*) There is inadequate inducement for States to participate in a three-way cost-sharing program for treatment facility construction. The experience of States that moved ahead, utilizing State funds in anticipation of repayment out of Federal aid at the level authorized, was such that few other States were tempted to follow suit. To encourage State financial participation, should the amount of the State allotment be increased if a State puts State money into the program? Or should States that contribute a certain percent be given first consideration when reallotment is made of moneys not obligated by the States?

(*d*) To produce maximum pollution abatement for the sum invested, changes are needed in assignment of priorities for receiving Federal aid. The present system, whereby "the appropriate State water pollution control agency" certifies a project as "entitled to priority over other eligible projects," has not been producing the integrated, comprehensive water quality control needed for basinwide pollution abatement. Without an interstate basin agency, planning for pollution abatement may be entirely uncoordinated in States bordering on the same river. And if a State spreads its allotment thinly, or distributes much of it to small or medium-sized municipalities, Federal funds available to big cities will provide little help and less incentive for sewage treatment facility construction. We hope a more rational system with emphasis on basinwide cleanup can be instituted through new regulations for assigning priorities. Or should assignment of priorities pass from the hands of the State agency to the regional offices of the FWPCA? Of course there are undoubtedly some political realities that must be considered in this connection.

When the Clean Water Restoration Act removed the dollar ceiling on aid to a project and increased the percent of project cost that could be covered by Federal funds, it became possible for a State to put more of its allotment into a single, big, significant project. But have the States applied a large part of their allotments to help major cities reduce the waste load they discharge? Have many States encouraged construction of regional treatment facilities by allocating 50 percent of the cost of such regional projects from the State's Federal allotment? This decision is one for the States to make, but for the most part States have preferred not to turn over so much of their allotments to single projects.

In the interest of efficiency and to show what can be accomplished, we think legislation authorizing a new aid program should be formed to encourage steady movement toward basinwide improvement in water quality. To reach water quality standards for a basin, Federal aid must be given to metropolitan areas if they are to attain advanced waste treatment with reduction of phosphate and nitrate loads. A change in allocation of amounts of Federal aid should accompany change in assignment of priorities.

2. We in the League of Women Voters are attuned to working out differences through persuasion rather than through adversary proceedings. But we have come to regard the formal water pollution control enforcement conference as events valuable chiefly for their newsmaking, which contributes to public education. The enforcement measures contained in section 10 of the Federal Water Pollution Control Act seem unnecessarily long, drawn out and complicated. We suggest critical reexamination to see whether a streamlined schedule and method of enforcement could be developed. The attitude of the public and of industry has changed from what it was when these cumbersome enforcement regulations were framed. Many industries have invested heavily in process changes and equipment to reduce pollution. Like the citizens concerned about environmental quality, companies making improvements want the laggards pushed along.

I would like to comment briefly about proposals to use a tax credit program to help industry meet the cost of pollution abatement.

3. The League of Women Voters does not favor a tax credit program to help industry meet the costs of pollution abatement. In 1967 our members, after study, reached the conclusion that limited aid to industry is necessary to expedite cleanup of the Nation's waters. Our members are willing to support Federal long-term, low-interest loans for abatement of industrial pollution. Assistance of this sort will help small, old, marginally profitable companies whose plants are the economic mainstay of communities that would suffer if the plant closed down.

The league does not favor investment tax credits because these do not help the companies whose need is greatest. A company with scanty profits owes scarcely any tax: so there is little or nothing to be offset by fast writeoff or investment credit. It is the large, profitable companies who benefit from investment credits: and these companies can and should, our members think, pay the cost of managing the waste products from their industrial processes. A tax arrangement that helps companies with large taxable incomes more than it does struggling companies, young or old, is not equitable; moreover, it increases inequalities of competition.

League members think costs of pollution abatement are a responsibility of the polluter and one of the costs of doing business. If expenses for abating pollution are considered to be like other business expenses, accelerated depreciation is more acceptable than investment tax credits. But the league doubts that tax relief is the efficient, effective way to bring about abatement of industrial pollution.

Tax relief will encourage continued dependence on treatment plants for industrial waste water, for costs of such plants can clearly be shown to qualify for tax benefits. But we are convinced that emphasis should be on changes in plant processes in order to use less water and to manage more efficiently the waste-producing steps. Elimination of waste-production should be the goal.

4. Our members think utility-type financing should be applied to sewer and sewage treatment services, with service charges related to cost of supplying the service, repayment of capital costs, and operation and maintenace costs over the life of the project.

User charges will grow more important as industries attach to public sewer lines in increasing numbers and more industrial and domestic sewage is treated together in municipal plants. We think adequate rates based on quality and quantity of sewage should be charged for waste water service, as charges are made for other utility services. Government programs should foster user charges. Why not make the levying of adequate user charges a requisite for consideration for Federal financial aid?

5. From time to time suggestions are made that the Federal Government should assume a much larger share of the cost of water pollution abatement—90 percent as was done in the Federal interstate highway program, for example. We think that money to eliminate pollution from Federal installations and activities should be included in the budget of each Federal agency and should be spent for that purpose.

However, when the league was developing its support for better coordination at the Federal level, league members deplored the differences in proportion of contributions and in required repayment under programs handled by different Federal agencies. "Shopping around" for the maximum amount of aid seemed undersirable to league members because (a) it encourages delay in solving the problem for which Federal aid is sought, and (b) it encourages choosing the solution for which most financial aid can be obtained. League members became convinced that variations in the amount of aid which can be offered under different programs distorts decisionmaking, reduces maximum benefits from the Federal investment, and is one factor in heightened interagency competition.

In recent years we have seen some tendency to limit Federal aid to 50 percent in a number of water programs, except where supplementation is provided for areas of great economic distress. For example, the Housing and Urban Development Act authorized grants to local public bodies to finance up to 50 percent of the cost of basic public water and sewer facilities. The Rural Water and Santiation Facilities Act also offered a maximum of 50 percent Federal aid. We see merit in matching Federal and State and local contributions. When public agencies and officials must fit together funding from three levels of government in order to move ahead on a program, each agency must show consideration for the interests and missions of those on the other levels. Citizens concerned about environmental values have reason to question whether any Federal program funded like the Federal interstate highway program would continue responsive to local situations.

6. I will touch on only one other issue. The next 10 years will be critical for estuaries and the coastal zone. The Congress will soon have three reports before it, one from the Commission on Marine Science, Engineering, and Resources, one from the Federal Water Pollution Control Administration, and one from the Fish and Wildlife Service. When Congress weighs the recommendations in these reports and considers creation of an agency and a program for the coastal areas, you will want to make sure that the policy objectives you establish will adjust the uses of estuarine and shore areas in ways that will control environmental alteration. Perhaps the Federal program formulated for the coastal zone and its estuaries can be the first Federal program in which America's great technological ability is applied to bring about environmental enhancement rather than to its degradation.

We hope serious thought will be given to establishment of a Bureau of Estuarine Management to watch over the special pollution and fish and wildlife problems of these valuable and vulnerable areas. We think great attention should be given to whether State coastal zone authorities—suggested by one of these reports—which might come to resemble port authorities in their freedom from control by voters and elected officials, are the best administrative arrangement that can be devised, especially at the opening of the environmental decade.

In conclusion, I would simply like to say that if elected representatives cannot bring about some improvement by normal legislative processes and governmental programs, or if improvement is bogged down in jurisdictional disputes between communities, agencies, and levels of government, concerned citizens will try to gain their goal in other ways—through the courts, through boycotts, through demonstrations, and through election of more sympathetic officials.

Thank you.

Mr. REUSS. Thank you, Mrs. Clusen.

Dr. George.

STATEMENT OF DR. JOHN L. GEORGE, PRESIDENT, RACHEL CARSON TRUST FOR THE LIVING ENVIRONMENT, ASSOCIATE PROFESSOR OF WILDLIFE MANAGEMENT, SCHOOL OF FOREST RESOURCES, PENNSYLVANIA STATE UNIVERSITY

Dr. GEORGE. Mr. Chairman, my name is John George.

I am president of the Rachel Carson Trust. I have been concerned with environmental matters for some 31 years. My credentials are spelled out in the full statement which I gave the committee.

One of the items that I didn't mention in that statement is that I am a birdwatcher. Lest the engineers feel I am hiding this, I mention it now.

I am very pleased to have this opportunity to discuss this matter of restoring and maintaining environmental quality with you, to discuss the action proposals for your environmental decade.

I think that all of us who have been involved in this matter welcome this opportunity because we agree with the committee's evaluation that it constitutes one of the most important problems facing us today.

I am going to discuss certain of the questions you asked and provide you with a more detailed written statement and then stand ready to answer questions.

You asked:

> What must government do to strengthen or redirect its existing programs for environmental protection and improvement?

Well, sir, I think we need an ecologically oriented policy or decisionmaking body, either a board or council that plans and coordinates all programs and sets priorities. Perhaps the Council on Environmental Quality is a step in this direction. But it must be a very strong Council.

The concern for environmental quality was crystallized by Miss Carson who voiced the concerns of ecologists with sufficient impact to attract the attention of the President's Science Advisory Committee. A decade ago ecologists were dismissed as well meaning but ill informed in economic realities.

Perhaps the statement Dr. Smith told us about this morning would indicate we are still being dismissed in that way. The PSAC report on "The Use of Pesticides" supported the thesis that single-purpose economic development could result in economic gain but with a loss of esthetic values.

This was really Miss Carson's message. Pesticides were a vehicle, a special issue. I think, after reviewing the impact of Miss Carson's book, never again, Mrs. Clusen, will we underestimate the power of a woman—not even an engineer will underestimate the power of a woman.

I am happy to say, Mr. Chairman, that when I was at Vassar some years ago, one of the professors, Mabel Newcomber, was a director in the League of Women Voters. She came in and asked about conservation issues. We discussed them, and in a small way I was involved in the beginning of the league's involvement in water conservation.

Today, ecologists can sit down with policymakers and plan a new wave of conservation progress; but the voices of economic forces have not been stilled. Many decisions are local and concerned with a particular industrial or agricultural operation which provides an overriding economic framework within which ecological thought is easily overwhelmed.

I, therefore, leave with you the thought that we need this directing council.

The question 2 you asked was:

> What programs should be expanded, curtailed, or eliminated? How? Why?

Major needs are to have a university base for Federal agencies and congressional groups concerned with environmental quality; increased funding of Federal agencies concerned with the environment and man's well-being; and a national board or council of ecological advisers.

Federal and university forces have united in agriculture with the system of agricultural experiment stations and the Federal and Cooperative Extension Services that were set up at the land-grant A. & M. colleges over a half century ago.

A new network of environmental research stations could not only organize a system for storing ecological knowledge, develop a basic fund of knowledge of our ecosystem, and encourage the growth and standards for the ecological profession, but also could predict probable ecological consequences of current or planned activities; help plan restoration of the environment; monitor current levels of specific pollutants; and facilitate public understanding of the relation of human society and its environment.

Federal agencies concerned with the environment, especially the Department of the Interior, need greatly increased funding and liaison with the universities. The new stations could establish this.

We need a policymaking Council of Ecologists who report either to the President or to the Congress, or both. Possibly this Council could be incorporated in the framework of the Council on Environmental Quality.

Programs to be curtailed cannot easily be listed publicly. Private agency heads and individuals could make numerous suggestions.

3. How can programs at all levels of Government be better coordinated to achieve maximum economy, efficiency, and effectiveness?

The policymaking Council of Ecologists referred to in question 1 would facilitate increased economy, efficiency, and effectiveness, as it would coordinate programs and funds.

I personally have found Federal workers—I was one at one time—very responsible and diligent, but they all work within prescribed limits. Dr. Smith emphasized this this morning. The activities of one group may interfere—and on occasion in the past we all know of instances where they have interfered—with the objectives of another group; and this will continue unless we have a strong directing Council.

Environmental conservation could become a matter of public policy by act of Congress. The Council could then develop appropriate guidelines or standards, criteria, and evaluation in keeping with congressional policy.

"Purse-string" power would be an effective way to insure realistic economy, efficiency, and compliance with policy in program planning, project design, conduct of work, and maintenance of the program. Periodic review by ecologists and citizen conservationists could help maintain effectiveness of programs.

4. What would be the cost of new programs to protect and enhance the quality of the environment? Who should administer such programs?

The policymaking ecological Council—I keep going back to that Council; I think it is central to the whole issue—with the help of the environmental research stations, could determine broad objectives, set priorities, estimate probable costs, and provide overall guidance, coordination, and in this sense—administration; but the various local, State, and Federal agencies and private companies could conduct the action programs. Mrs. Clusen has spelled out in detail some of these programs this morning. As to the cost, I don't think anyone knows the cost at this time; certainly I don't.

You asked:

How can we encourage more public participation in the consideration of proposals that affect the environment?

Every community has environmental problems. In drawing up the master plan discussed in question 4, the Council should seek the opinion of local groups. This would get local involvement, trust, and support, and the benefit of the detailed, specific knowledge and experience of the local people.

Certainly, Mr. Chairman, the many individuals, companies, federations, and agencies that are speaking on this subject today are evidence of the fact that we already have many involved in this question.

There are calls for a guarantee of an undergraduated environment as an inalienable right. This movement is not a passing fad.

6. How can we make public agencies and officials more responsible to environmental concerns in the administration of environmental problems?

Again the answer to this question revolves around how effective we are in solving question 1 and the activities of the ecological Council. A strong Council with broad powers of review and a conservation policy mandated by the Congress will solve the problem.

7. Can the public effectively protect our air and water through class action litigation?

I don't know enough about this so I won't say anything about it.

8. How should the Federal grant programs be strengthened to help protect and improve environmental values?

You might fund the roughly 130 congressional advisers, establish a number of environmental quality professorships, and create the new network of environmental research stations already discussed.

If each adviser to the congressional ad hoc committee on the environment were given $1,000 to prepare a report along lines that the Environmental Clearinghouse or some other directive group such as this committee suggests, and then attend a summer conference to discuss, plan, and coordinate the plans, programs, and budgets submitted, you would, for $100,000 or so—perhaps a little more than that, counting administrative costs—swiftly tap the centuries of training, experience, and thought of the ad hoc advisers.

Second, set up some 100 or more environmental quality professorships at major intellectual centers, both public and private, across the United States. Let each be funded with perhaps $50,000 for salaries and expenses and with additional funds available to meet special needs. And again for a modest expenditure you would have a terrific impact on the university community and I think the country.

A third course of action would be the development of the network of some 50 environmental research stations at large public universities on a matching-fund basis. I would suggest in the interest of economy that these stations begin with a modest appropriation of some $25 million for the first year; but with the plan to double these moneys every year for 5 years until some $800 million would he involved in these major intellectual and educational undertakings.

These centers should have broad basic and applied responsibilities in research, training, and extension, but be flexible enough to permit centers of excellence that fit the area.

In conclusion, the average citizen not only wants no further deterioration of the environment but also wants an active program of restoration. This requires enlightened planning.

Ecological consequences must be anticipated. Satisfactory, or even enhanced, conditions for an organism may occur 99 percent of the time but be lethal 1 percent of the time. It doesn't matter much to that organism if it is dead.

We all want low-cost food and power but let us not lose sight of our real objective—our well-being. This is really what we want. Conservationists want a quality world, no ghettos, no malnourished children, no oiled beaches. The American people are beginning to understand the interdependence of man and his environment. We can now come to grips with the basic interactions of population, resources, and culture and the well-being of man.

(Dr. George's prepared statement follows:)

PREPARED STATEMENT OF DR. JOHN L. GEORGE, PRESIDENT, THE RACHEL CARSON TRUST FOR THE LIVING ENVIRONMENT; ASSOCIATE PROFESSOR OF WILDLIFE MANAGEMENT, THE PENNSYLVANIA STATE UNIVERSITY; AND CHAIRMAN OF THE IUCN COMMITTEE ON ECOLOGICAL EFFECTS OF CHEMICAL CONTROLS

Mr. Chairman, I am John L. George, professor of wildlife management at the Pennsylvania State University, president of the Rachel Carson Trust for the Living Environment, chairman of the International Union for the Conservation of Nature and Natural Resources Committee on the Ecological Effects of Chemical Controls, and an adviser to the congressional ad hoc Committee on the Environment. I received my first degree in Forestry and Conservation from the University of Michigan in 1939; and so for over three decades I have been concerned with environmental quality and wild environments in this and other parts of the world. I have been involved in research in wildlife ecology; taught conservation of natural resources in private and public colleges and universities; worked for public conservation agencies, including the National Park Service and the Fish and Wildlife Service; and for a brief period was part of a private conservation organization.

I am very pleased that you have given me this opportunity to discuss my views on the very difficult problem of restoring and maintaining environmental quality during the present environmental decade. Since time is short, I will discuss certain of the eight questions you asked me, provide you with somewhat more detailed supporitng material, and stand ready to answer any questions or requests for further detail.

"1. What must Government do to strengthen or redirect its existing programs for environmental protection and improvement?"

We very much need an ecologically oriented policy or decisionmaking body, either a board or a council, that plans and coordinates programs. Perhaps the newly created Council on Environmental Quality is a step in this direction.

Much of the aroused public concern for environmental quality today was crystallized and quickened by Miss Carson who was able to voice the concerns of ecologists with sufficient impact to dent the insensitive barrier of narrow interests and economically oriented decisionmakers who, until at least recently, dominated most of our governmental, private, and university thought and news media. I well recall how magazines reported Miss Carson's work when it first appeared some 8 years ago. I am happy to say these same magazines tell a very different story today largely because of the action of the President's Science Advisory Committee. A decade ago it was fashionable to dismiss ecologists as well-meaning but ill-informed as to the economic realities of life. Terms such as "unrealistic" and "emotional" and "arbitrary" were freely used with the crass assurance that thinks would continue to be decided economically. When the PSAC report on "The Use of Pesticides" appeared the body of scientists speaking could not be dismissed as crackpots. The world began to listen and hear the thoughts that single-purpose economic development could result in a mixed blessing of economic gain at the price of degradation of the environment and the esthetic aspects of man's world.

The people and the Congress and certainly many thinking individuals in Government or universities were already much more concerned with environments than the polluters and the actions of the day indicated. Today, a few years later, ecologists are able to sit down with policymakers and decisionmakers, with elected executives and legislators, and plan a new wave of ecological progress. We have done this a few other times in our past—at the turn of the century, again in the thirties—and each time we made great progress. I think this is very much to our credit. I hope this period, however, will be our finest hour.

But the voices of economic forces have not been stilled; nor have attitudes been reversed. Their lobbies are known, well-organized, and strong; and without your strong and continued support, ecological thought and philosophies will not guide policy decisions and become a part of our value systems. Many of the vital decisions are local and concern with a particular industrial or agricultural operation which provides an overriding economic framework within which the local people live and work, and within which ecological thought is easily overwhelmed. Also the number of ecologists is very, very limited, especially those who have ever had any management responsibilities.

There is, of course, nothing wrong with efficient low-cost operation or with a local group wishing to prosper. You will not find ecologists to be obstructionists. I firmly believe in a managed world; but I think that management today during this stage in the evolution of our society must be enlightened management. Today this means consideration of environmental consequences. I doubt that ecologists will be unilateral, unreasonable or arbitrary in their decisions. This is not their nature. They certainly will be concerned with local problems. Their job in planning is incredibly complex and they are in danger of being swamped by a bewildering array of mandates and acts. Finally, they must work within an interacting complex of populations, resources, and culture which perhaps only conservationists understand fully.

"2. What programs should be expanded, curtailed, or eliminated? How? Why?"

A major need is to have a university base for Federal agencies and congressional groups concerned with environmental quality. This could be met with a new network of environmental research stations. Also certain Federal agencies concerned with the environment should receive increased funding. Finally, I think we need a national council of ecological advisers.

A most successful wedding of Federal and university forces has been accomplished in the field of agriculture. I think all of America and indeed the entire western civilization owes a tremendous debt to the system of agricultural experiment stations and the Federal and Cooperative Extension Services that were set up at the land grant and A. & M. colleges over a half century ago. The success of this combination is evident to anyone flying across this land; it's evident to our enemies. It is the base of our awesome technology. And its very success is the essence of our discussions today. We have created a new young, urban, nonfarm society with a growing demand for a quality environment and recreational opportunities; and with little understanding of or concern with agriculture. This group does not identify with research or extension efforts geared primarily to food and fiber production. This group does interest itself in research or extension efforts dealing with various aspects of environmental quality including wildlife. The question has been phrased as to whether in an age of affluence we necessarily will have to live in a world of effluents, or toxic by products of our technology. I think the answer to this question is "No." Increasingly in the future, research and extension will be focused on this question. Therefore, I feel that a three-part program would help attain our objectives for environmental quality:

(1) A network of environmental research stations. These could be set up at major universities much as the agriculture experiment stations were. The success of the agriculture experiment stations during the past century in solving problems of our agricultural practice has been a major factor in making us the greatest and most prosperous Nation in the world, and the surplus energy our agriculture has given us enables us to assume world leadership. Similar research by our allies, with our aid, is the basis for the power of all western cultures and societies. The system has been successful, but it is highly specialized toward food and fiber production. These are vitally needed skills, especially in solving world problems of food production. However, in the interests of environmental quality it is important to remember that many of our present problems stem from overly pragmatic, short-range objectives of low-cost production. Many able scientists have met their responsibilities within this specific mandate and therefore did not consider environmental side effects of their efforts. Pesticides are a good example of the type of problem which results from this conflict of objectives and value systems.

A network of environmental research stations could not only organize a system for storing all pertinent ecological knowledge (and conversely, point out where more needs to be known), develop a basic fund of knowledge of our ecosystem, and encourage the growth and high standards for the training of students in the ecological profession, but also could predict probable ecological consequences of current or planned activities, help plan management activities for restoring the quality of the environment, monitor current levels of specific pollutants, and facilitate public understanding of the relation of human society and its environment. Research, training, and extension activities would thus be the main functions of these environmental research stations.

(2) Increased funding and authority for Federal agencies concerned with the environment from this ecological viewpoint. The Department of the Interior, especially, needs a greatly increased funding and liaison with the universities. The Department of Agriculture, through the land-grant-schools, the cooperative agricultural extension services, and the agricultural experiment stations has a valuable base (both of influence and incoming information) which the Department of the Interior lacks. The environmental research stations should establish the same close relation between Interior and the campus which agriculture now enjoys.

(3) A National Council of Ecological Advisers who report either to the President or to the Congress, or both. I have recommended this for some time as I have indicated in the answer to question 1. Possibly this Council should be incorporated in the framework of the Council on Environmental Quality.

As to which programs can be curtailed or eliminated, no one can cheerfully proclaim these publicly; but it would be a very simple matter to sit down privately with agency heads and individuals who could make numerous suggestions. It is possible that some of these suggestions might be difficult for Congress to accept.

"3. How can programs at all levels of government be better coordinated to achieve maximum economy, efficiency, and effectiveness?"

I think the policymaking board or council of ecologists referred to in question 1 would facilitate increased economy, efficiency, and effectiveness, as it would be the means of coordinating programs and funds at various levels; but policy could be set by an act of Congress.

Federal workers are among the most diligent, responsible, and industrious in the Nation but all work within very specific prescribed responsibilities, and the activities of one group can interfere with the objectives of another. When the Fish and Wildlife Service was charged with accelerating the acquisition of wetlands to help save marsh areas, it was competing with farm programs to drain marshlands. The objectives of both groups were valid but the programs were exactly opposite in their impact on any given area. The importance of these activities varies with the maturity of the society. Earlier in the evolution of our society the emphasis was predominantly on the production of cheap food and perhaps the draining of marshes was logical. Today the marshes have a primary value as wetlands for wildlife or for other aesthetic uses or as a water storage or filtration zone, and should not be drained.

Environmental and ecological conservation could and probably should become a matter of public policy by act of Congress. The council could develop appropriate guidelines on standards, criteria, and evaluation. Because Federal, State and local funding is involved in so many programs "purse-string" power would be an effective way to insure realistic economy, efficiency and compliance with policy in program planning, project design, conduct of work, and maintenance of the program. Periodic review by ecologists and citizen conservationists could help maintain effectiveness of programs.

"4. What would be the cost of new programs to protect and enhance the quality of the environment? Who should administer such programs?"

The full cost of a program to protect and enhance the quality of the environment is unknown as yet but the council or board could determine a program and administer it.

Some studies suggest we are spending a lesser amount of our gross national product on environmental quality today than 10 years ago. As an emergency measure the policymaking board or council referred to in question 1 should establish a set of priorities and approximate costs. They would define the broad parameters of the program and then fashion a trial master plan, This should be a spacial plan which, watershed by watershed, considers ultimate objectives across the United States. The so-called multiple-use concept is necessarily complex and interdisciplinary; and it requires a very difficult zoning, but the uses of all areas must be part of the master plan for attaining given objectives. Industrial zones are as essential as wilderness zones and should be part of the same plan. Without one we can not have the others.

The policymaking ecological board or council, with the help of the Environmental Research Station as consultants, would provide overall guidance coordination, and in this sense administration, but the various local, State, and Federal agencies and private companies would conduct the action programs. Curiously, the agencies, companies, and other groups which initially contributed much of the pollution must play a major part in any successful program to correct it. I hope they will do this with the fervor of a repentent sinner, rather than with the hostility of a reluctant recruit following orders. Hopefully, the ingenuity of American engineers will be as devoted to environmental quality as to cost-benefit analysis.

"5. How can we encourage more public participation in the consideration of proposals that affect the environment?"

Increased participation will be facilitated by involving local people in local decisions, but many groups are already involved.

Every community has environmental problems and in the drawing up of the master plan discussed in question 4 and planning board or council should seek the opinion of local groups. This would: (1) get local involvement and support; and (2) get the benefit of the detailed and specific knowledge and experience of the local people. The decisions in the master plan need to be made on a broad front and the local plans must fit the overall master objectives but there certainly should be flexibility in both directions while fashioning a major course of action. In many instances action will be balked if local townships do not concur with the actions, as they have jurisdiction.

Certainly however individuals, companies, federations, and agencies are already involved today. There are calls for a new constitutional amendment to guarantee an inalienable right for an undegraded environment. Labor unions have suggested that one of their bargaining demands this year will be a better environment. They are not new allies. A hundred years ago the railroad brotherhood supplied the needed punch to help the conservationists set aside the Adirondacks and Catskills in New York.

This movement is not a passing fad. We should easily succeed in keeping it going and the younger generation, who certainly have grounds for cynicism, may find some reason for faith in us again.

"6. How can we make public agencies and officials more responsive to environmental concerns in the administration of environmental programs?"

Again the answer to this question revolves around how effective we are in solving question 1 and the activities of the board or council. In my opinion the creation of an ecologically oriented decisionmaking board or council with broad powers of review will solve the problem.

Objectives and goals will then be planned in an ecological framework or reference or in the absence of that, at least reviewed by an ecological board or council. Since I firmly believe that people want the quality environment ecologists will insist upon, the ecologists will in no way be obstructionists. Rather they will be a part of the planning team and will make the final product a part of the overall world that people want. Most local, State, and Federal action agencies could coordinate their programs under such an arrangement. At least it would be worth a serious try.

"7. Can the public effectively protect our air and water through class action litigation?"

I don't know. I doubt it.

"8. How should the Federal grant programs be strengthened to help protect and improve environment values?"

I think that as a start you might fund the congressional advisors, establish a number of environment quality professorships, and create a network of environmental research stations.

If you gave each advisor to the ad hoc committee on the environment from $1,000 to $10.000 to prepare a report along lines that the Environmental Clearinghouse or some other directive group such as this committee suggests, and then arranged for a summer conference for discussion, planning, and coordination of the plans, programs, and budgets you would, with a relatively small amount ($100.000 to $1 million) swiftly tap the centuries of training, experience, and thought of the roughly 100 congressional advisors. Also, I suggest getting the thinking of the Federal action agencies and the private conservation groups in this planning session.

Second, I suggest for your consideration, setting up some 100 or more environmental quality professorships at major intellectual centers, both public and private, across the United States. Let each be funded with perhaps $50,000 for salaries and expenses and with additional funds available to meet special needs for projects which these professors might develop. Again this would be swift and relatively inexpensive, perhaps $5 million per year, and as the success of this program becomes evident (as I predict) the program could be expanded.

A third course of action would be the development of the network of some 50 environmental research stations which I would like to see initiated at large public institutions across the land on a matching fund basis and which I have described in question 2. I would suggest that these begin with modest appropriations of perhaps $500,000 for each station, or a total of from $25 to $30 million for the first year; but with the plan to double these monies every year for 5 years until some $800 million would be involved in these major educational undertakings. In this way I think the money could be spent fruitfully as there would be time for the necessary realignment and training of staff and responsibilities within the universities. These centers should have broad basic and applied responsibilities in research, training, and extension much like the agricultural experiment stations. The precise programs should be flexible enough to permit centers of excellence that fit an area's particular interest and skills. Although these centers need not have any agency responsibility I would hope that they would work closely with Federal, State, and local officials who do have management responsibilities.

In conclusion, the climate has changed and the average citizen now not only wants no further deterioration of the environment but also wants an active program of restoration of a quality environment where it has been lost.

The Gallup organization has conducted a poll for the National Wildlife Federation and the report, given in February of 1969, states that over half of the persons interviewed are "deeply concerned" about the degradation of the quality of the environment and "almost three of every four people interviewed said they would be willing to pay * * * additional taxes to improve our natural surroundings." We may have sent a man to the moon in the sixties, but as Senator Boggs recently suggested, our national goals in the seventies could well be to drop a man in Lake Erie and bring him out alive. I think such a program would have wholehearted support.

Ecological consequences must be anticipated. It is of little consequence in the life of a particular organism or population if satisfactory or even enhanced conditions occur 99 percent of the time and are lethal 1 percent of the time. Once a living thing is dead, it's dead, and some resources are irreplaceable.

Many of our problems could, in my opinion, be resolved by a planning board or council of policymaking ecologists aided by a new network of environmental research stations, the strengthening of Federal conservation agencies, the establishment of environmental quality professorships, a conference of congressional advisors, and increased participation in planning at all levels.

I come from a State (Pennsylvania) which has borne the price of supporting the Republic for 200 years. During this time there has been the most ingenious exploitation of resources and the scars are deep. It will take a mammoth effort to heal these wounds. Therefore, I very much appreciate being able to present these views to you in the hopes they may help you as you act to help us. In any event, I thank you for your leadership in these matters.

Mr. Reuss. Thank you, Dr. George. Mr. Howe?

STATEMENT OF SYDNEY HOWE, PRESIDENT, THE CONSERVATION FOUNDATION

Mr. Howe. I am Sydney Howe, president of the Conservation Foundation. We appreciate very much your invitation to speak at this hearing.

I must observe that the invitation is quite substantial in scope. I shall not be able to cover everything I would like to.

Really, your subject is the subject of our foundation, and we are quite overwhelmed with the possibility of a complete response.

I would like to register, in summary, a few ideas which I hope are timely and practical. And I shall give you a full statement for the record.

First, a word about priorities. I think that the pollution of air, water and land, including all of the related aspects of waste management and dispersal of toxic materials, should have our highest attention. These are the things that could do us in in our time.

I am speaking of the coming 10 to 15 years. There certainly are many other elements of land planning and management, water resource management, that need our continuing and earnest attention. But I do register this sense of priority about pollution.

We do have, as we look to additional opportunities to improve the environment, some real opportunities in the area of just plain making existing programs work. One of the most important needs of the 1970's in our view is to actually deliver on the promises already made to the American people in the environmental field. We must provide maximum effective funding and vigorous enforcement of environmental protection programs, laws, and regulations already on the books.

Moving to another area, I think that citizen participation in decisions affecting our environment is one of the most important things to cultivate. And I think the Federal Government can do some things about this. Our foundation has always believed that the best guarantee of environmentally enlightened decisionmaking is early, strong, and broadly representative civic participation in the decisionmaking process.

The current explosion of general awareness about the environment was really touched off by citizens who cared, and was initially supported by legislators who cared, rather than by Government administrators.

Toward the end of expanding and enhancing citizen involvement in the decisionmaking process, I have a couple of specific suggestions. In the area of public hearings and information, I think it is fair to observe that the public hearing procedures of such agencies as the Corps of Engineers, Bureau of Land Management, Atomic Energy Commission, and others are often optional and discretionary. We feel that these should be a public right, rather than a matter of agency discretion, and that the Administrative Procedure Act should so insure.

Another matter concerns State hearings. Our national air and water quality management programs, which rely primarily on State control measures, are now subject to what are often very inadequate State hearing procedures. In several States public notice of hearings and advance public information about standards to be heard at hearings—standards for cleanup—have been grossly inadequate.

We have had correspondence with the National Air Pollution Control Administration on this subject which I include for the record. We do make some very specific suggestions therein. There is in the Congress pending legislation that would require the States to hold public hearings on the implementation of air quality standards in addition to those already required on the standards themselves, and perhaps this poses opportunities for tightening up.

Exemptions in the Public Information Act dealing with proprietary information, intraagency memoranda and executive privilege provide agencies with subtle hurdles for the concerned but too often ill-informed citizen. And this needs to be eliminated.

In the field of judicial review and the right of standing, we believe that citizens, as citizens, not just as representatives of economic interests, have the right of standing before a court to ask the court to see that an agency's decisions are at least consistent with the statutory authority and mandate. Impediments to citizen rights to standing before the courts to seek judicial review of administrative decisions should be removed—either through constitutional amendment, as has been proposed by some Members of Congress in the form of the so-called convervation bill of rights, or through legislative clarification of the Administrative Procedure Act. We believe that the result would not be to open the flood gates of litigation; the expense and the difficulty of obtaining expertise alone militate against frivolous suits.

Certainly the President's recent declaration that "clear air, clean water, open spaces, should once again be the birthright of every American" is in the spirit of what I am saying.

In another area, we feel that the Federal Government could do more to encourage local governments to perform well in securing environmental quality at the local level.

In the past 10 years there has been a rather wonderful emergence, particularly in the Northeast States, of municipal conservation commissions. Nearly 600 communities in the coastal States from Maine to New Jersey now have such generally advisory (but sometimes with certain teeth) bodies to represent the local interests in the environment. They give citizens who care an official place in local government to do something, to represent the conscience of the community in an environmental overview.

Some of these play a watchdog role on water and air pollution; some are concerned with utility lines, highway route selection; some with protection of wetlands, but almost all are at least advocates, catalysts, and activists within local government on behalf of a better environment.

It is interesting to us that the same basic concept is beginning to appear in other parts of the country. Santa Barbara, Calif., shocked by the oil leakage of a year ago, has set up an environmental quality advisory board. Also, in Sonoma and Santa Cruz Counties in California and in Virginia's Fairfax County there is a movement afoot to establish similar local conservation or environment bodies at the county level.

Perhaps there is some channel in the existing "701" urban planning assistance program in HUD through which Federal encouragement to the work and functions of local environmental conservation commissions could be established. Perhaps there are other ways. I hope you might find the time to look into this.

Moving abroad for a moment, with reference to U.S. impact upon the world environment, we are exporting to developing parts of the world many kinds of technology which are causing severe environmental problems.

We have today an emphasis on the export of heavy industrial equipment, chemicals, concrete, steel, and so forth, but we are really exporting very little in the technology of air, water, and solid waste pollution control. I think that all of our foreign aid programs should include effective pollution control measures.

Pesticides, which have come under severe attack in this country, and which we are beginning gradually to phase out in terms of the hard nondegradable materials, should be banned for export when they are found unsafe at home.

We are also exporting, often with AID loans, a rather mushrooming system of tourist business and attendant facilities such as highways, that are beginning to have impact on some of the world's outstanding environments, the outstanding natural places of the world. These benefit both local development and a favored few who are able to travel to such places. This travel is going to have impacts that we are not anticipating, by assisting the protection of natural reservations in the areas where tourism will grow, encouraged by our foreign aid. I think we have an obligation to assist countries so impacted toward systems of natural preservation.

I have not attempted to deal with many of the fundamental questions raised by the very broad substance of these hearings. I would try to summarize other matters by saying that we need much greater respect for natural systems in the planning and development of many kinds of facilities—from highways, to airports, to powerplants—regardless of manmade political jurisdictions.

As the President said recently in announcing an agreement with the Dade County Port Authority to limit development of its airport near Everglades National Park, "We have learned that the development of major facilities . . . may have widespread environmental and social consequences that cannot wisely be left entirely to local initiative and local decision."

I think our next step is to learn that no single decision can protect any environment. Rather we must look to continuing intergovernmental and regional planning and management arrangements along the lines of the recently established Federal-State river basin commissions, and, for example, the Federal-State-local San Francisco Bay Conservation and Development Commission.

While we have great hopes for the new three-man Council on Environmental Quality, and we look forward to establishment of a joint House-Senate Committee on the Environment, we do feel there is no substitute for continuing and vigilant congressional surveillance of the kind initiated by this committee.

We thank you for the opportunity to speak to you.

(Mr. Howe's prepared statement, and the attachments thereto, follow:)

PREPARED STATEMENT OF SYDNEY HOWE, PRESIDENT OF THE CONSERVATION FOUNDATION

As a nonprofit privately supported research and education organization dedicated to "encouraging human conduct to sustain and enrich life on earth," the Conservation Foundation appreciates the subcommittee's invitation to present its views on some of the environmental needs of the seventies.

Instead of responding to the subcommittee's list of questions in any comprehensive way, I would like to mention just a few ideas which seem timely and are, I hope, practical.

Priorities.—First of all, I would like to register a sense of priorities for the immediate future. It seems to me that pollution of air, water, and land, including all the related aspects of waste management and dispersal of toxic materials, should have our highest attention. Pollution is the environmental hazard most apt to do us in in our time.

Our needs for population control for development of a national growth policy, and of a national land-use policy are central and essential.

And I recognize that population and economic growth policies and land-use decisions are entwined with, and directly affect, environmental pollution. Nevertheless, for the short run—in the coming 10 to 15 years—I feel that survival itself may be at stake in how we cope with toxic pollutants which find their way into the human body.

Making existing programs work.—In our enthusiasm for the new idea, for the new program, we cannot afford to take our eyes off the overriding need to make existing environmental conservation programs work. So, for openers, I suggest that an important need of the seventies is to deliver on the promises already made to the American people in this field. Let's provide maximum effective funding and vigorous enforcement of environmental protection programs, laws and regulations that are already on the books—beginning with air- and water-quality management, control of persistent pesticides, and with open land acquisition and protection as well.

Citizen participation in environmental decisions.—I am particularly pleased to see that the questions asked by the subcommittee include No. 5: "How can we encourage more public participation in the consideration of proposals that affect the environment?"

We have long believed that the best guarantee of environmentally enlightened decisionmaking is early, strong, and broadly representative civic participation in the decisionmaking process.

One of the basic truths of the current explosion of general awareness about "the environment," is that it was touched off by citizens who care and initially supported by legislators who care, rather than by Government administrators. The best guarantee I know of for seeing to it that today's public awareness is productive and sustained is to enlarge opportunities for concerned citizens to participate, in effective ways, in environmental decisions. This is a necessary base for all future progress.

Toward this end, I have two specific suggestions: administrative reform in regard to public hearings and other procedural and information matters, and clarification of rights of citizens to secure judicial review of administrative decisions.

Public hearings and information.—In the Federal Government, while the Department of Transportation last January took a step toward insuring meaningful hearings before Federal-aid highway route and design decisions are made, hearings are in most cases purely a matter of discretion within such agencies as the Corps of Engineers, the Bureau of Land Management, and the Atomic Energy Commission. These agencies are continually engaged in programs and projects with major environmental effects. Public hearings on them should be a public right rather than a matter of agency discretion and the Administrative Procedure Act should so insure.

Furthermore, our national air and water quality management programs, which rely primarily on State control measures, are now subject to what are often inadequate State hearings procedures. As the Conservation Foundation has reported to the National Air Pollution Control Administration (NAPCA), although State public hearings are required by Federal law on proposed State air quality standards, in several States public notice of hearings and advance public information have been grossly inadequate. We suggest that federally-assisted environmental management programs should require that State hearing procedures meet national standards of adequate notice and advance information. Some specific suggestions for standards which we suggest the Federal Government should insist upon are included in the attached exchange of correspondence with NAPCA, in which the agency takes the position that it does not have legal authority to require meaningful State hearings.

As an example of further opportunities for improvement in this connection, we note the pending bills in the Congress to require the States to hold public hearings on implementation plans for air quality standards, in addition to hearings on the standards themselves.

Without adequate continuing public information, however, even model public hearing requirements can be virtually meaningless. Citizen groups report that they face difficulties in identifying and then obtaining the information they require on public works projects, powerplants, pesticide registration, and a host of other government proposals affecting the environment. Exemptions in the Public Information Act dealing with proprietary information, intra-agency memoranda and executive privilege provide agencies with subtle hurdles for the concerned but too often ignorant citizen.

Judicial review and the right of standing.—If public agencies charged with environmental programs are to be responsive to broad public needs, then not only are adequate public hearings and freedom of information policies required, but agency findings of fact and agency decisions based on these findings must be reviewable by a court. Citizens, as citizens, not just as representatives of economic interests, must have the right of standing before a court to ask the court to see that an agency's decisions are at least consistent with its statutory authority and mandate.

Recent cases, of which the *Scenic Hudson*, 354 F. 2d 608 (C.A. 2, 1965), and *United Church of Christ*, 359 F. 2d 994 (C.A. D.C. 1966), cases are notable examples, have been clearing the way for citizens at least to present certain public interest considerations before the courts and thereby help guarantee that subsequent agency decisions reflect these considerations.

But today we note that the executive branch of the U.S. Government, through the Justice Department, is engaged in significant efforts to deny these rights to citizen groups. In current litigation involving the Hudson River Expressway (*Citizens Committee* v. *Volpe*), the East Meadow Creek region of National Forest land in Colorado (*Parker* v. *U.S.*), and the Mineral King proposal in California (*Sierra Club* v. *Hickel*), the Department of Justice is contesting the rights of citizens to obtain court review of environmentally important administrative determinations.

Without reference to the substantive merits of the citizen arguments in these particular cases, it is clear that an important principle is at stake. Impediments to citizen rights to standing before the court to seek judicial review of administrative decisions should be removed—either through constitutional amendment, as has been proposed by some Members of Congress in the form of the so-called conservation bill of rights, or through legislative clarification of the Administrative Procedure Act. We believe that the result would not be to open the flood gates of litigation; the expense and the difficulty of obtaining expertise alone militate against frivolous suits.

I might add that the present policy of the executive branch to deny environmentally concerned citizens a right to their day in court seems somewhat inconsistent with the President's declaration in the state of the Union address that—

"Clean air, clean water, open spaces * * * should once again be the birthright of every American."

Encouraging local governments.—One of the happier success stories in conservation action during the last decade is the emergence of local conservation commissions throughout seven Northeast States. The concept, invented in Massachusetts 12 years ago, has spread to nearly 600 communities in each of the coastal States from Maine to New Jersey.

The commissions are units of local government, composed of unpaid citizens appointed by the governing boards of their local governments. Although in some States they have authority to buy and manage open-space land, they are essentially advisory. On the basis of inventories of community resources, and unhampered by such day-to-day demands as refereeing zoning disputes or operating park and recreation programs, they advise local governing boards on a broad spectrum of environmental matters.

Some commissions serve a watchdog role on water and air pollution. Some are concerned with utility lines and highway route selection, some with protection of coastal wetlands from unauthorized filling. All are advocates, catalysts and activists within local governments on behalf of a better local environment.

Their special value lies in the fact that they are in a position to have an overview of their community's environment as a whole. The same basic concept is beginning to be put to work elsewhere around the country. The City Council of Santa Barbara, Calif., shocked by last year's oil leak, set up an environmental quality advisory board. In addition to oil pollution, its initial assignments include a pesticide study, review of the city's harbor dredging program, and of a highway project that would damage an estuary. At the county level, county supervisiors as far apart geographically as California's Sonoma and Santa Cruz Counties and Virginia's Fairfax County are now moving to establish similar units.

One of the highest leverage opportunities for conservation at the local level—where most environmental decisions are made—may be to encourage and help local governments to establish their own environmental conservation commissions. The commissions give many citizens who care for their communities an opportunity to apply themselves effectively. Perhaps an existing Federal assistance program, conceivably the "701" urban planning assistance program in HUD, could be used for this purpose.

The local conservation commission movement success story is told in a book we published recently, "Conservation Commission in Massachusetts—With a Supplementary Report on the Emergence of Conservation Commissions in Six Other Northeast States." It is also discussed in a magazine article, based on the book, by William J. Duddleson, entitled "Conservation Commissions on the Move," in Open Space Action magazine, September–October 1969, p. 17.

The United States and the world environments.—The United States exports many technologies now causing severe environmental problems abroad.

Large sums of money are spent through our foreign aid and lending agencies to support industrialization. Despite emphasis on export of heavy industrial equipment, chemicals, concrete, steel, etcetera, there is little or no exportation of air, water, and solid waste pollution control. All our foreign assistance should include effective pollution controls—particularly where we are assisting industrial expansion.

Pesticides, which have come under severe attack in the Western World, continue to be exported in rapidly increasing quantities to the less developed majority of the world's land and people. It is time to ban the exportation of all pesticides which are found to be unsafe for use domestically, such as DDT.

We are also exporting, often with AID loans, a whole system of tourist businesses and attendant facilities in an effort to improve the pleasuring grounds of the minority in some of the world's outstanding natural environments. It seems irresponsible for us not to support the development of effective wildlife reserves and systems of national parks at the same time that we are fostering the very forces that will destroy a wide diversity of natural systems. In our international assistance program, strong emphasis should given to the restoration and protection of important natural environments abroad.

New arrangements.—I have not attempted to deal with many fundamental questions raised by the very broad substance of these hearings. Obviously, many other issues concern both you and ourselves. To list just a few: The needs for substantial national programs in solid waste management, noise control, and coastal zone management, and for much greater respect for natural systems in the planning and development of many kinds of facilities, from highways, to airports, to powerplants, regardless of manmade political jurisdictions. As the President said the other day in announcing agreement with the Dade County Port Authority to limit development of its airport near Everglades National Park: We have learned that the development of major facilities * * * may have widespread environmental and social consequences that cannot wisely be left entirely to local initiative and local decision."

Our next step is to learn that no single decision, such as last month's involving the south Florida jetport, can protect any environment. Rather, we must look to continuing intergovernmental and regional planning and management arrangements along the lines of the recently established Federal-State river basin commissions, and of the Federal-State-local San Francisco Bay Conservation and Development Commission.

We very much appreciate this subcommittee's comprehensive concern for the Federal share of our collective responsibility to secure and protect environments fit for people.

While we have great hopes for the new three-man council on environmental quality, we realize that it is advisory in nature and that the provisions of the Environmental Policy Act of 1969 are not self-implementing. And while we look forward to establishment of a joint House-Senate Committee on the Environment, we feel that there is no substitute for continuing and vigilant congressional surveillance of the kind which has been initiated by this committee.

THE CONSERVATION FOUNDATION,
RESEARCH—EDUCATION,
Washington, D.C., September 2, 1969.

Dr. JOHN T. MIDDLETON,
Commissioner, National Air Pollution Control Administration,
Arlington, Va.

DEAR DR. MIDDLETON: Serious problems have arisen over procedures being followered by some States to meet public hearing requirements of the Air Quality Act of 1967. We respectfully call them to your attention and urge you to take appropriate corrective action.

It is our belief that public hearings required by the Act should give concerned citizens a realistic opportunity for involvement, as envisioned in the act and in the "Guidelines for the Development of Air Quality Standards and Implementation Plans," published by HEW in May 1969.

As you know, the Conservation Foundation is currently conducting a clean air project to educate civic leaders on the air pollution problem and on opportunities under the Federal-State program to deal effectively with this problem. The foundation's work is designed to present in lay terms the technical information necessary for citizens to form their own judgments as to how clean they want their air to be, and to inform them of the impact of the Federal Act upon their communities. Both the complexity of the subject and the nature of grass-roots citizen activity make such an educational program exceedingly challenging.

We believe that a critical step specified in the 1967 act, as far as citizen expression is concerned, is the requirement that the States hold public hearings on proposed air quality standards. There is great citizen interest in learning the facts of air pollution and in expressing intelligent concern at the public hearings. But the process is both time-consuming and difficult, particularly for those newly introduced to the technical, legal and social complexities of the subject.

The magnitude of this undertaking is evident to anyone who has seen the two air quality Criteria documents issued by HEW. It is a prodigious fact to assimilate the criteria in these voluminous documents, which—in the words of the HEW Guidelines—"summarize available information on the relationship between exposures to air pollutants and their effects on man and his environment, including injury to health, damage to materials and vegetation, reduction of visibility, and economic losses," and then to apply this knowledge to evaluating proposed air quality standards. The standards, of course—to quote again from the Guidelines—"represent air quality goals established for the purpose of protecting public health and welfare" and—to quote from the *Criteria* documents themselves—"prescribe pollutant exposures which a political jurisdiction determines should not be exceeded in a specified geographic area, and are used as one of several factors in designing legally enforceable pollutant emission standards."

The very nature of complex criteria and standards makes it essential that the concerned public have adequate time in which to digest this material. Stated simply, it takes time for concerned citizens to relate various proposed levels of particulate matter and sulfur oxides to health and well-being.

Thus we would like to call to your attention recent actions by some States which have severely limited the possibility of meaningful participation in hearings by an informed public, as intended by the public hearing requirement of the Air Quality Act and as set forth in the Guidelines:

Some State air pollution control boards or commissions have refused to give even a general idea of prospective hearing dates.

Some States have given inadequate notice of public hearings on proposed air quality standards.

Some States have failed to make the substance of their proposed standards available to the public until shortly before the hearing.

And in one case, a State released a new draft of its proposed standards at the hearing itself.

Specifically, we cite the following, examples:

1. In the Metropolitan Washington, D.C., region, the State of Virginia held its hearings with ample notice but released a second draft of the proposed standards at the hearing itself (although the redraft was dated 5 days prior to the hearing date).

2. In the same region, the District of Columbia has not (as of this date) announced when its hearings will be held—nor even given a general idea—although the proposed standards must be submitted to HEW by November 11, 1969. (Maryland, however, has been a model which other States might well follow: proposed standards have been released, circulated, and publicized, and the hearings are widely known to be scheduled for late September.)

3. In Connecticut, officials gave only 21 days' notice of the hearing date and did not release the proposed standards until 5 days (4 working days) before the hearing.

4. In Pennsylvania, the State Air Pollution Control Commission gave 29 days' notice of public hearings on proposed standards for the Pittsburgh region, but access to the proposals was delayed 4 days, leaving only 25 days for study and

analysis before the hearing date. In addition, the proposals were not comparable to the HEW criteria and consequently, civic leaders are having considerable difficulty in understanding the actual meaning of these technical proposals and relating them to HEW's criteria.

5. In Colorado, standards are written into State law. When the legislature considered revisions earlier this year, it did so on 1 or 2 days' notice of committee sessions. The committee meetings were not generally publicized. Citizens had little or no time in which to consider proposed changes. Some changes were brought up for the first time at the committee sessions themselves. No transcript was made of the committee meetings. In brief, Colorado clearly made a mockery of the public hearing requirement.

We understand, however, that after protests were made, a process more closely resembling public hearings as envisioned in the Air Quality Act is scheduled by the State for later this year. We trust that HEW will carefully scrutinize the situation there to make certain that Colorado meets the public hearing requirement.

We believe the public hearing requirement of the Federal statute presumes that each hearing be meaningful and not a mere pretense of public participation. The very essence of any public hearing is the timely encouragement of expression of opinions, desires and facts by any and all concerned parties. Federal regulations under other laws which similarly require the States to hold public hearings—such as the Federal Highway Act—indicate the validity and necessity of this presumption.

The HEW *Guidelines* state:

"In general, hearings held under the act should be an open forum for presentation of facts and expression of opinions on the air quality standards. * * * States should try to provide the greatest possible opportunity for participation by all persons and groups who ask to appear."

We submit that meaningful "expression of opinions" becomes impossible without adequate notice and sufficient time to analyze such highly technical material.

Many States are now approaching the time for public hearings in meeting their responsibilities under the Air Quality Act of 1967. Although we recognize the limitations of your authority in determining State procedures in this respect, we urge you to take all possible steps to insure that the States give adequate notice of these hearings and that copies of the proposed standards to be considered at the hearings are made available well in advance of the hearing dates. If it is within your authority to do so, we urge you to issue revised guidelines as soon as possible to guarantee that adequate hearing procedures are followed by the States. We recommend that HEW require:

1. That the States give at least 30 days' notice of public hearings on proposed air quality standards.
2. That proposed standards be available at least 45 days prior to hearings in which they will be aired and that States include in each hearing notice an announcement that the proposed standards are available upon request.
3. That the States make the proposed standards available to the public in understandable terms that relate to the air quality criteria issued by HEW.
4. That the States avoid revisions in proposed standards between the time of their issuance and the day of the hearing—or, if significant revisions become necessary, that the States give appropriate notice and reschedule the hearing to allow adequate time for consideration of the new proposals.
5. That both the State notification of a public hearing on proposed air quality standards and the proposed standards themselves be released to the general media in the region—daily newspapers, radio and television—in addition to the often obscure publications used for official notice purposes.

We consider 30 days' notice of a public hearing and 45 days availability of understandable proposed standards a minimum requirement because of the complexity of the subject. It is difficult enough for professional people to evaluate the proposals properly with less than 45 days' notice, to say nothing of the citizen volunteer groups who are deeply concerned about air pollution and wish to testify intelligently and responsibly. Without greater advance notice than most States are providing, citizen participation in the standard-setting process will be limited, or even frustrated altogether.

We believe that increasing public awareness of environmental problems has been accompanied by a mounting citizen desire for a voice in public environmental policy, and that any actions, deliberate or otherwise, which discourage such participation make a sham of participatory democracy.

Sincerely,

SYDNEY HOWE,
President.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE,
CONSUMER PROTECTION AND ENVIRONMENTAL HEALTH SERVICE,
Arlington, Va., September 30, 1969.

Mr. SYDNEY HOWE,
President, The Conservation Foundation,
Washington, D.C.

DEAR MR. HOWE: Thank you for your recent letter regarding the procedures followed by State governments in holding public hearings under provisions of the Clean Air Act, as amended. I certainly welcome your interest in this matter.

Following an examination of the statute and the legislative history, we have come to the conclusion that the Department of Health, Education, and Welfare does not have authority to go beyond what is already included in the guidelines with respect to the conduct of public hearings.

Nevertheless, I believe that governmental agencies at all levels have an obligation to insure that all interested parties have an opportunity to play a meaningful role in decisions on environmental quality.

As you know, the National Air Pollution Control Administration has been making a strenuous effort to be sure that citizens in air quality control regions are made aware of scheduled public hearings on air quality standards and take the fullest possible advantage of the opportunity to participate in such hearings. This effort will continue.

Since such public hearings must be conducted under State laws and regulations, the National Air Pollution Control Administration will attempt to assemble and disseminate information on the applicable laws and regulations, so that citizens and representatives of interested groups will know the rules to be followed.

In the meantime, you may be sure that we will make every possible effort to insure that hearings on proposed air quality standards are conducted in such a way as to permit meaningful participation by all affected parties.

In closing, let me say that I am grateful for the Conservation Foundation's continuing efforts in behalf of the public interest in clean air.

Sincerely yours,

JOHN T. MIDDLETON,
Commissioner.

(NOTE.—The Conservation Foundation's "Conservation Commissions in Massachusetts—With a Supplementary Report on the Emergence of Conservation Commissions in Six Other Northeast States," to which Mr. Howe referred in his prepared statement, is in the subcommittee files. The article entitled "Conservation Commissions on the Move," by William J. Duddleson, Open Space Action magazine, September–October 1969, p. 17, follows:)

[From Open Space Action magazine, September–October 1969]

CONSERVATION COMMISSIONS ON THE MOVE

(By William J. Duddleson)

The conservation commission movement, born in the Commonwealth of Massachusetts in 1957, is now striking out in decidedly new directions. Progress reports on the growth of these officially recognized local conservation agencies have included several articles in past issues of Open Space Action. The most recent contribution to the literature—and an excellent one at that—is the 216-page

> book just published by the Conservation Foundation. The book is Conservation Commissions in Massachusetts* by Andrew J. W. Scheffey, director of the Center for Environmental Studies at Williams College. It is chockablock with case histories illustrative of how commissions have acquired and protected land and catalyzed their communities into environmental action.
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> Scheffey's account of the Massachusetts experience is supplemented by an equally readable and informative report on the emergence of conservation commissions in six other Northeast States, and on the prospects of the movement spreading further across the Nation. Written by William Duddleson, director of policy studies at the Conservation Foundation, the supplement provides a useful tool to those who would champion the introduction of local conservation agencies in their own States and communities. State-by-State reports on what is happening are backed up with listings of key contacts and publications in each State, together with the text of each State's enabling law. Portions of the Duddleson supplement are adapted here with permission of the Conservation Foundation.

The unpatented 12-year-old Massachusetts invention known as the local conservation commission first began to catch on in other States in 1960. Today, upwards of 4,000 citizens are serving on conservation commissions in more than 500 communities in the seven Northeast coastal States from Maine to New Jersey, and somewhat more than half of these communities are outside of Massachusetts.

What these new agencies of local government *can do* varies from State to State; their legal powers differ according to each State's enabling law. What they *actually do*, and how they do it, differs from community to community. But all are advisors to the elected governing board which appoints them. And all are advocates, catalysts and activists within local government on behalf of a better local environment.

Virtually all give a high priority to securing open-space land. Some also are watchdogs for cleaner waters and healthier air. Some plant trees. Some fight hard pesticides or out-of-place billboards. And some help local schools make environmental education make sense. Some do all of these and much more.

And each has learned some lessons which can be useful to others elsewhere who are looking for a tested, practical, local instrument for environmental improvement.

In Rhode Island, the first of Massachusetts' neighbors to import the idea, leaders of the commission movement are the first to tell you: Learn from our early mistakes. For one thing, don't rely too heavily on commission members who are tried and true conservationists, all right, but who don't understand the civic and political action processes in their communities.

And the experience in Connecticut and New Hampshire—as well as in Rhode Island—demonstrates both the advantages of State support, and the limitations of a lack of it.

In Maine the idea, like some other ideas from Massachusetts, met with a cool reception at first. In part, this was because of bugs in the first version of Maine's enabling law. But this year, as threats of coastal pollution became more apparent, an increasing number of costal communities began turning to the commission idea to help them keep the coast of Maine a special kind of place.

New York's 2-year-old commission movement is growing steadily despite the handicap of an uncertain State charter. And New Jersey, latest to adopt its own variation of the basic Massachusetts theme, is showing what can happen when a strong State enabling law is supported by both citizen and government conservationists. Only a year after passage of the 1968 enabling legislation, more than 50 New Jersey communities already have commissions at work and 100 more are expected to be on the job by the end of 1970.

The summary observations which follow—based primarily on interviews with leaders of the conservation commission movement in the Northeast States where commissions are at work in 1969—seek to identify some common factors of failure and success.

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*Published by the Conservation Foundation, Washington, D.C.

The steadily growing acceptance of conservation commissions throughout the Northeast demonstrates that the commission idea has the ability to marshal and directly engage a significant and previously under-used civic resource for environmental action. The sheer number of citizens that the movement already has brought into local government is impressive. (See chart.)

Initiatives to establish conservation commissions are not being taken by public agencies but by private citizens. This feature, a basic strength of the movement in Massachusetts, continues to characterize its offspring elsewhere. The idea has grown from the bottom up. In most of the conservation-commission States, government agencies were not enthusiastic at first, and in at least one, New York, the idea was initially opposed by a number of State agencies, including the department of conservation.

Nevertheless, a major key to success is the degree of support, assistance, and encouragement extended by State government to help the commissions carry out their statutory responsibilities. In Massachusetts, one State employee works with the commissions full time and 14 part time. Connecticut and New Jersey each have one State employee assigned to serve commissions. New Hampshire has one State university extension service employee assigned part time to commission work. Rhode Island, Maine, and New York in 1969 provide less State support and encouragement, and these are the States where the commission movement has the furthest to go.

Special State financial assistance for conservation commissions stimulates their establishment in the first place and greatly increases their operating leverage. Massachusetts, which still has nearly half of all commissions in the seven States, is the only State with a grant-in-aid program exclusively for local governments with commissions. Connecticut is the only other of these States with an active State program of financial incentives for local conservation-land acquisition projects. And these are the States where the commission movements are strongest.

State	Enabling law enacted	Commissions reported established in 1969	Maximum Number on each commission	Maximum possible commissioners in 1969
Massachusetts	1957	276	7	1,932
Rhode Island	1960	27	7	189
Connecticut	1961	101	7	707
New Hampshire	1963	85	7	595
Maine	1965	8	5	40
New York	1967	20	9	180
New Jersey	1968	54	7	378
Total		571		4,021

Just as strong State agency support makes for more effective local commissions, a strong commission movement helps to build and support effective State agencies and State programs. State government's benefits from this mutually supportive relationship are emphasized by Joseph A. Gill, head of Connecticut's Department of Agriculture and Natural Resources. Gill credits Connecticut's local conservation commissioners with convincing his legislature of the merits of a number of proposals to strengthen his department's programs. These have included more than $10 million worth of bond issues to finance State open space-recreation land acquisition projects, in addition to $10 million for local projects. In 1969 Arthur W. Brownell, commissioner of natural resources in Massachusetts, told a conference called in New Jersey to launch the movement there: "Government can be educated and shaped and the greatest impact the Massachusetts commissions have had, as far as government is concerned, has been in influencing the thinking of the Massachusetts Department of Natural Resources."

A State's conservation or natural resources agency is not the only nor necessarily the best State service agency for local conservation commissions. Some States' natural resource agencies are responsive to the contemporary environmental concerns of most of their citizens (that is, residents of urban and suburban areas) ; some, however, are not and old ways die hard. In New Hampshire, the State university's College of Agriculture and the cooperative extension service, together with private philanthropic interests, are taking the lead in encouraging the commissions. In New York, the State office for local government, so far, is more interested in local conservation agencies than is the department of conservation. And in New Jersey the State department of agriculture is vying with the department of conservation and economic development to help conservation commissions. Inasmuch as activities of the stronger commissions encompass a broader range of environmental problems than does any one existing State agency, eventually some ties with the "environmental overview" units being considered by a number of States would be a logical progression.

A strong State association of conservation commissions is important to the success of the movement generally and to bolster the weaker commissions, and separation from State government makes for a strong and influential State association. However, a local commission and a State association of commissions are no substitutes for a broadly based citizens organization or coalition of organizations devoted to environmental improvement in each locality and State. The conservation commissioners are, after all, government officials even though they serve in an unpaid capacity. Where an environmental coalition of strictly private citizen groups agrees with a commission, the private groups have more freedom and more muscle for the necessary political push to get the job done. As one commissioner has expressed it, "The citizen organization's independence of the official commission gives strength to both and credibility to the statements of the organization."

Even in States where a State enabling law specifically authorizing local conservation commissions is not legally necessary, enactment of such a law greatly facilitates their establishment and effective operation. Although local governments in most States have broad discretion to appoint advisory units on almost any subject, as a practical matter only a few local governments have set up conservation advisory units without sanction of State law. This point is emphasized in the New York report which follows.

The many roles of conservation commissions in a particular State cannot be appreciated solely by understanding the State's enabling law. Many commissions, for example, effectively serve as watchdogs over administration of State and local laws concerning such matters as water quality, air quality, utility line and highway route selection, and protection of coastal and inland wetlands. Although legal responsibility for such concerns typically goes to State officials and local governing boards, in practice it often is the local conservation commission which blows the whistle on a polluter or sees to it that no stream is diverted, parkland encroached upon, or marsh filled until the community understands what is at stake and all the legal requirements are met.

There is no magic in the conservation commission concept that can overcome inadequate leadership on the part of the commissioners or inadequate support from the political leaders of a community. As the official of one State association of conservation commissions put it: "It cannot be emphasized too much that not all commissions are successful—far from it. Many do nothing but talk to each other and sometimes not even that!"

Many of the more successful commissions do not consist entirely of "conservationists," in the narrow sense of having prior experience as leaders of citizen conservation groups or as professionals in the field. Contemporary conservation is moving away from an appeal to a rather exclusive few to a better understanding of its importance as a social good important to all. Commissions need the services of civic leaders or aspiring civic leaders with a knack for getting things done, as much as of professional or amateur conservationists. A former State official in New England who has been a commission watcher since the movement's beginning advises: "Don't overlook the essential fact that the real strength of this movement and, most important, its underlying credibility, stems from the involvement of ordinary citizens in its affairs. Conservation commissioners are usually not ecologists and professional conservationists. Actually, I suspect they would be far less effective if they were."

Finally, the Massachusetts invention is not one which must be copied in one uniform or "correct" fashion in order to work elsewhere; rather the basic idea—of establishing within local government a focal point for environmental overview and advocacy—is amenable to adaptation to a diversity of situations, State by State and community by community.

NEW YORK: ONE STATE'S EXPERIENCE

The Massachusetts Town Conservation Commission idea first took hold beyond the borders of New England in 1967, in New York State.

Priscilla Redfield Roe, a resident of Long Island's Suffolk County, was among those who played a leading role in bringing this about. Mrs. Roe had moved to Long Island in the early 1960's from Massachusetts. There, as a member of the local League of Women Voters, she had helped establish and then served on the Sudbury Conservation Commission. With the accelerating pressures of urbanization even more dramatically evident on Long Island than around Boston, she saw that town and village governments in New York lacked adequate administrative and financial tools to control their environments.

In 1965 Irving Like, author of the New York Conservation Bill of Rights, had persuaded the Long Island town of Babylon to establish a conservation commission under general home rule authority without reference to any special State law. As a member of a planning committee for nearby Brookhaven, Mrs. Roe had recommended similar action for that town and eventually this was done when Brookhaven added conservation duties to a waterways board.

This was local action, but to promote the conservation commission idea throughout the State Mrs. Roe decided to work for legislation on the Massachusetts model. Passage of the initial State legislation resulted from a series of encounters between Priscilla Roe and two State legislators from Long Island.

In 1965, at a planning conference on Long Island, Assemblyman Perry Duryea, Jr., was discussing New York's matching grant program for recreation land acquisition. When he observed that few of the smaller local governments, the towns and villages, had taken advantage of this program, Mrs. Roe suggested that one reason was lack of a clear assignment of responsibility for conservation planning and action at the town level. She described the New England conservation commissions and asked: "Why can't we do something like this?"

At a Governor's Conference on Natural Beauty called by Gov. Nelson Rockefeller in 1966, Mrs. Roe suggested to a panel on suburban development that conservation commission enabling legislation be included in the panel's recommendations. New York, she said, had done well in recreation and conservation planning on the State level. "But on the town level there is still for the most part a vacuum. We lack the machinery. Town governing and planning boards are overburdened with other work. We need a special agency of town government to which we can assign quite definite responsibilities for natural resource planning and action."

The panel members agreed. Suburban areas, their report said, can provide natural values for the benefit of the metropolitan population as a whole, as "a stable component of the metropolitan complex, not merely partially developed land in transition from the countryside to core . . . moving outward like an expanding ripple." The panel recommended that communities use such available tools as New York's Municipal Open Space Easement Act, base local planning on natural resource surveys, and emphasize public education. To help tie these together the panel called on the legislature to authorize municipalities to establish "something like the conservation commissions in Massachusetts and Connecticut."

Assemblyman Duryea, who was at the conference, asked Mrs. Roe to send him details of the Massachusetts program and said he would try to get a bill through the legislature. He then referred the proposal to officials of the State conservation department and several other State agencies. They were not enthusiastic; their views were unfavorable and the matter lapsed.

Later in 1966, Duryea invited some of his constituents to meet a representative of the Conservation Department seeking support for a referendum on a proposed $200 million park development bond issue. The proposal included a grant program for local governments. Again the point was raised that local governments below the county level generally had not responded to earlier State incentive grants. Mrs. Roe emphasized not only the importance of local governments taking responsibility for local resources, but also the importance of small areas—of projects too small for State or even county attention. Both points struck a sympathetic chord with Duryea. He introduced legislation early in 1967, and his bill was co-sponsored by another Suffolk County Assemblyman, Peter Costigan.

In the State Senate, meanwhile, Senator Leon Giuffreda had become interested as a result of hearings of the Joint Legislative Committee on Conservation and Natural Resources, of which he was the ranking senate member. At one of these hearings, held to gather ideas for improvement of conservation laws, the persistent Mrs. Roe again raised questions of local responsibility and the tools needed for the job. Senator Giuffreda requested the same information about Massachusetts conservation commissions that had been sent to Assemblyman Duryea, and subsequently sponsored a Senate companion to the Duryea bill.

The Duryea bill drafted in Albany with help from State agencies used parts of the Massachusetts law but did not follow its lead throughout. It spoke of town conservation advisory councils rather than conservation commissions. The advisory councils were not to be given the explicit authority Massachusetts commissions have to acquire land and manage lands, to accept gifts of land and easements, or to set up a conservation fund. And the New York bill was not tied in with State financial incentives, as Mrs. Roe had recommended. In this form the bill was passed by the Legislature in 1967 as section 64–b of the New York State town law. By June 1969 some 20 New York towns—including eight of the 10 towns in Long Island's Suffolk County—had formed conservation advisory councils.

In addition to Mrs. Roe, principal advocate of the conservation commission idea in New York has been the Open Space Institute. Says Charles E. Little, institute executive vice president: "The only way to get anything done is to fix responsibility for it and to make that responsibility as specific as possible. Consequently, we urge municipalities to consider a new kind of commission or council such as the Massachusetts, Connecticut, and even the weaker New York law calls for."

The State's Natural Beauty Commission—a coordinating unit comprised of the heads of 10 State agencies, and chaired by the head of the Office for Local Government—is taking a different approach. Although Commission Director Charles C. Morrison, Jr., agrees that there is a need for local conservation agencies, he believes that the disadvantages of section 64–b outweigh its advantages. He explains:

"First, 64–b doesn't cover all types of the 1,600 municipalities in New York—villages, cities, and counties, as well as towns. And under our municipal home rule law any municipality can create an advisory body. Viewed from this perspective 64–b is not necessary. Second, 64–b does not reflect the 'new conservation.' Local advisory units should be empowered to deal with the man-made aspects of environmental quality, as well as with natural features. Third, local advisory commissions should be able to vary the membership, duties, and relation to other local agencies according to local requirements, and to amend their laws at will as their programs develop; if they organize under a special State law they are bound to the duties it sets forth."

Morrison notes that some municipalities have formed advisory commissions under general home rule powers both before and after passage of 64–b. He points to the Rockland County Natural Beauty Committee and Broome County Conservation Council, as well as the Babylon and Brookhaven agencies, as examples.

What New York needs, Morrison says, is a strong promotional and servicing program by a State agency with primary responsibility for this, complemented through a statewide private association of local advisory commissions. In 1969, the Natural Beauty Commission published a sample local law and action for establishment, under general authority of New York's municipal home rule law, of municipal "advisory commissions for conservation and natural beauty."

Charles Little of the Open Space Institute differs with Morrison. Little emphasizes the practical value of specific State legislation such as section 64–b, rather than its legal necessity in New York. "The public relations value of such a law is one of its great values," he says. "It gives the civic leadership in a community something specific to talk to when they talk with their elected officials. That's why even a weak 64–b is better than no State law at all. The important thing is that this thing—this conservation commission idea—works."

Mrs. Roe agrees that there is nothing to prevent communities from setting up conservation agencies without regard to section 64–b. "But," she says, "the fact is that few have done it, whereas having 64–b in State law helps to give the councils status as a permanent feature of local government and to render them less dependent on the whim of any one administration.

"Moreover, aside from the benefits of simplicity and clarity there is mutual advantage to working with a somewhat uniform framework. Having somewhat the same status as neighboring towns facilitates joining together—on mutual projects on the land, as well as on mutual concerns before the legislature." Among the latter, she sees a need for New York's conservation councils to have better fiscal tools, including a State grant program similar to Massachusetts, and a broader legislative charter.

Mrs. Roe notes that a town can assign additional duties to its council if it so chooses, "including recommendations on any aspect of land or water resource use, including esthetic aspects." "Highway design and subdivision regulations, for example, could perfectly well be subjects of council recommendations concerning location, planting, drainage, open space provisions, et cetera. At the same time there is no doubt that encompassing the other local government entities and encouraging attention to the effects of man-made construction would strengthen the New York legislation."

Whatever their name, form, or authority, by 1969 hardly a month passed that a local conservation council, commission, board, or committee wasn't being established somewhere in New York State.

"The thing is," says Priscilla Roe, "that more and more people are realizing that the State and Federal Governments cannot do the whole job, that there must be a focal point of environmental responsibility at the local level too."

PROSPECTS BEYOND THE NORTHEAST

What about the future of the conservation commission movement—beyond the seven States where it has caught on, beyond the Northeast?

In Vermont, the only New England State which doesn't have commissions, an effort is expected to be made in the 1970 legislature to secure enabling legislation. The idea has been discussed in Vermont for years but, in part because of an emphasis on promotion of regional planning commissions, a consensus hasn't yet been reached on a need for conservation commissions. Some conservationists had felt that given the "right" encouragement from the State planning office, these planning commissions could perform the functions of conservation commissions. However, Justin Brande of Middlebury, chairman of the Vermont Natural Resources Council, believes that many Vermont conservationists have been somewhat disappointed in this expectation. The council last year decided to support State legislation "leading to the establishment of town and/or regional conservation commissions similar to those presently active in Massachusetts."

One indication of expanding interest elsewhere around the country is the origin of inquiries about commissions received by the Massachusetts Department of Natural Resources. George R. Sprague, director of the department's division of conservation services which serves the commissions in Massachusetts, reports that the requests for information average a dozen a week.

Rather often, Sprague says, queries come from people who live in metropolitan suburban areas or the areas just beyond suburbia which will become suburban next. This, as we have seen, is where many of the most active commissions in New England are located and where initial interest in the two newest commission movements—those of New York and New Jersey—is keenest.

Some of the inquiries to Sprague's office indicate interest in transferring the conservation commission idea to county or regional, rather than municipal government elsewhere. In New England, towns are the principal unit of local government and blanket rural and suburban as well as urban areas; county government is not a strong force. Elsewhere, counties govern most of the undeveloped land where many significant conservation options remain. In some parts of the country, therefore, it appears likely that need will be felt for conservation commissions operating at the county or regional level.

Some county governments in New York State already are experimenting with such conservation advisory units. And in Iowa, county conservation boards which resemble the municipal conservation commissions of the Northeast in some ways, are no longer an experiment. Iowa's county conservation boards, first authorized by the legislature in 1955 (by Chapter 111A of the Iowa code), now are established in 93 of the State's 99 counties. Working through these 93 boards, Iowa counties by 1969 had acquired and were managing 623 conservation and outdoor recreation areas totaling 37,008 acres. According to H. W. Freed, director of county conservation activities for the Iowa State Conservation Commission, their county tax-supported budgets for 1968 totaled $5.1 million. Many of the county boards in Iowa have had unusual success in winning bond issues for conservation purposes and in securing matching Federal grants. County conservation boards similar to Iowa's are operating on a smaller scale in Tennessee and Illinois and also have been the subject of enabling legislation in

Kentucky. And in Wisconsin, county natural beauty councils have been authorized by State legislation.

There are other flickerings of interest around the country:

In Florida, a conservation commission-like proposal on a regional river basin basis has been proposed as part of a State government reorganization plan. Robert M. Haynes, a former chairman of the Boxford (Mass.) Conservation Commission, took the idea with him when he moved to Lake Wales, Fla., and saw a need for some type of local action-stimulator comparable to the commission he had served in Massachusetts.

Across the country in Santa Barbara, Calif.—environmentalized by an offshore oil well blowout early in 1969—the city council a few months later established an environmental quality advisory board. A physicist, Howard A. Wilcox, was named chairman of this five-man conservation commission-like agency, and City Councilman Alan Eschenroeder, who proposed the board, was named the council's liaison to it. The board's assignment is broad: to advise the council on actions necessary for "preservation or improvement of both the natural environment of Santa Barbara and man's relationship to such environment." In addition to oil pollution, initial tasks include a pesticide study, a review of the city's harbor dredging program, and study of a proposed highway project that would put an estuary to the bulldozer.

To the north, several cities on the San Francisco peninsula were looking into the feasibility of commissions. And across the bay in Berkeley, City Councilman Thomas McLaren in 1969 introduced an ordinance to establish a Berkeley Conservation Commission. As McLaren envisaged it, the proposed commission would augment present programs of the city's planning and park commissions by "taking a broader perspective," by actively seeking to conserve open spaces and San Francisco Bay shoreline, and by clarifying the ecological impact of proposed large-scale bayshore development projects. Its recommendations would be presented to the city council for final action. McLaren also sees a role for such a city commission in providing liaison with the new regional San Francisco Bay Conservation and Development Commission.

T. J. Kent, Jr., professor of city planning at the University of California, and head of a team which in 1969 produced a report on "The Case for Open Space in the San Francisco Bay Area," agrees with McLaren. "We need something like conservation commissions in the bay area because we need action, and because we need public expression of an ecological viewpoint," Kent says.

Charles Little, of the Open Space Institute in New York City, thinks California may be the next State to set up local action machinery along conservation commission lines. "I expect that California, probably the bay area, is next because people there are realizing that they don't need to define their conservation problems further," he says. "The need is for action, and the first step in the action process is to set up better machinery for action."

The ground would seem to be equally fertile in many other metropolitan regions. Many of the environmental problems of the Seattle or Cincinnati metropolitan areas, for example, are not essentially different from those of the Boston area or of the New Jersey fringes of the metropolis around New York City.

How the conservation commission movement fares in New Jersey will indeed provide the best test yet of its transferability to many other parts of the Nation. And this youngest of the progeny of the idea invented out of a need some felt to save a coastal marsh in Massachusetts a dozen years earlier, is a remarkably healthy and fast-growing youngster.

"Our local governments are forming commissions at the rate of about one a week," David Moore of the North Jersey Conservation Foundation reported in the fall of 1969, just a year after New Jersey's enabling law was passed. "We've counted 54 new ones since the first of the year and we can't keep up with it," he said.

If conservation commissions do succeed in making cities and suburbs better places to live in in New Jersey, where the city-county forms of local government are more similar to those of the rest of the country than are New England's towns, there seems to be no reason why they will not succeed in many other parts of the country beyond the Northeast.

Mr. REUSS. Thank you, Mr. Howe, and all four of our panelists. You have made a real contribution to these hearings.

The point has been made by almost every witness that frequently governmental agencies work at cross purposes—one of you mentioned the Agriculture Department subsidizing drainage in the duck breeding areas, and the Interior Department endeavoring to get farmers to reflood the same potholes.

If I am not mistaken, Mrs. Clusen, you have got some classic cases right in your own front yard in Green Bay, Wis. As I recall it, you have a very valuable estuarine marsh, Atkinson's Marsh, which is very close to the city; is that right?

Mrs. CLUSEN. Yes, along the bay shore.

Mr. REUSS. Is it not a fact that the U.S. Army Corps of Engineers is now busy using that marsh as a fill for some of the spoil that it dredges out of the river? And it is fast ruining it?

Mrs. CLUSEN. It certainly is. In fact, the corps had a hearing on where the site would be that the fill would be taken from last summer at which I appeared, and the city officials and a number of interested citizens all asked the corps to find someplace else to take the landfill from, because this is a duck habitat among other things. The upshot of this seemed to be that this was the only place it could be done, according to them, and it is now underway.

In addition to that, the city also had proposed developing this as an industrial park. So the local government was responsible, too, for the left hand not knowing what the right hand was doing.

Mr. REUSS. Did the Corps of Engineers make any cost studies of how much more it would cost to dump the spoils someplace other than in the marsh?

Mrs. CLUSEN. Yes, they did, and this was a part of the argument. There really was, as I recall it, very little publicity given to the final decision or on what basis it was reached. It just happened.

Mr. REUSS. And the corps is going right head, continuing to destroy this marsh?

Mrs. CLUSEN. They are working there now, yes.

Mr. REUSS. Dumping into it?

Mrs. CLUSEN. Yes. I am afraid it is with the cooperation and assistance of our city fathers. That is what makes me so careful in not wanting to lay this completely at the door of the corps.

Mr. REUSS. It is being done with the cooperation of the Corps of Engineers and the city fathers, but the League of Women Voters is against it?

Mrs. CLUSEN. It is not with our cooperation, no.

Mr. REUSS. Dr. Smith raised a very fundamental and interesting point that I would like to explore. The Full Employment Act of 1946, to which we are all very devoted, specifies as our national goals maximum production, maximum purchasing power, and maximum employment. Maximum purchasing power and maximum employment are not before us today. But that maximum production goal, as I pointed out, Dr. Smith, may lead not only to the diversion of resources from essential things into foolish things—which is perhaps the price we have to pay for a free enterprise system—but also to the concentration on the mere accumulation of physical goods, without even looking at whether the production of those goods, or the goods themselves, harm the environment.

Have you considered, or has any other member of the panel considered, whether Congress ought to revisit the 1946 act to see whether the economic imperative of more and more production every year is really always in the national interest?

Dr. Smith. Well, I think several things happened at the passage of the act and later. First of all, the climate in which this act was enacted is very important because all of us had girded our loins for the inevitable consequences of the ghastly depression that was to follow World War II. We had the experience of the 1930's very fresh in our minds.

As a result it seems to me we went a little overboard in subscribing to the number of things that you mentioned. Part of our present difficulty is in the quantification measurements of standards of living. You do this by a variety of means.

You can do it by any of the national income counts, the most classic of which I suppose is the gross national product, which simply represents market value of all of the goods and services produced in a given year at current prices. Some of these services are absolutely frivolous and nonsensical, while others are highly deleterious.

You might say, how do you do this in a free enterprise system? How do you prevent these consequences? I do not know the answers. If we are going to have effective control on the environment, we are going to have to spend more of our funds collectively—which is a nice way of saying we are probably going to have to raise taxes. Not necessarily the tax legislation that just passed.

There is no question in my mind that certain kinds of taxes must be levied. I do not know how you resolve certain conflicts. Mr. Howe and others have suggested some of the difficulties. The solution to the transportation problem may be much more compatible with the environment if you use one method rather than another. It may cost more or less, but in either event, a political factor is almost as difficult as the economic one.

We have the classic case here in this city. We have a public transportation system that is ludicrous, and it is not the responsibility necessarily of the transportation facilities we have.

We have the problem we have to live with day in and day out, with one-driver cars going to and from work. This is the height of inefficiency. As a public we cannot stand it. If we were a corporation and the management insisted on this kind of operation, we would fire him. But we do it consistently in city after city.

We need to improve our transportation facilities, our intercity and what we call city-link transportation facilities, and it need not involve a single solution. I am not saying get rid of all of the automobiles or highways, but other methods must be investigated on a total-approach basis, with environmental costs included.

Mr. Howe has suggested some implementation of programs by utilizing fully and appropriately the existing institutions. Certainly this is one area in which the Department of Transportation should be called to account.

Mr. Reuss. There are certainly many, many complications that I can see in revisiting the concept of maximum growth.

One is that while we have got great growth in automatic swizzle sticks and electric toothbrushes, as you point out, we haven't had enough growth in goods to give the food and clothing and shelter to the poor one-fifth of our people that they have a human right to.

Another hangup is that under our system, maximum production has been the key to maximum employment.

Dr. SMITH. That is right.

Mr. REUSS. I think we all do want maximum employment, so that we have to be a little careful about mortifying the flesh too much about these materialistic goods—we have to find some way of seeing that, somehow or other, people have those jobs.

A third hangup is that also, under our system, the way the Federal Government and most State and local governments get money to build the fine sewage processing plants, air pollution reduction equipment, parks and playgrounds that we all want is from the expanding gross national product. This means that the Federal Government's tax take has more to bite on.

So before we amend the concept of maximum production, we are going to have to think of how, consistent with more attention to the environment, we can keep our goal of jobs for everybody and adequate national revenues, while doing something about our submerged poor in this country.

I would appreciate any thoughts any of you have on this.

Dr. SMITH. I want to be responsive to what you have said, but I am not at all sure that the problem is amending out the full production and full employment. I think it is a matter of direction. I think it is a matter af allocation, rather than it is of total or absolute magnitudes.

Mr. REUSS. As you know, the law now contains the naked words "maximum production." If one put "of a proper mix of private and public goods" in parentheses after the word "production," would that perhaps be helpful?

Dr. SMITH. Yes. For example, it would occur to me if you set up a mass transit system, I don't know how many x dollars this would cost. Maybe there would be some dimunition in expenditures on private automobiles, but there would also be an increase in the other expenditures. It doesn't occur to me that you automatically come to the conclusion that in the long run there will be a dimunition in total production and jobs. You will have some frictional problems in employment, things of this nature, but I think this is going on all of the time anyway for one reason or another.

It would occur to me the Government could very well take some leadership. The grants-in-aid programs are a good example. The Land and Water Conservation Fund, as the chairman knows, has a 50–50 sharing provision. It has been a little over that—I think 60 to the States. The State must submit a recreational program to the Federal Government and then the moneys are dispensed in the usual appropriation procedure.

We have a number of cases where the State has established a park or similar area with these funds, only to have another Federal aid grant program come barging right through the park with a highway. Now, the highway usually prevails, because their matching money is 90 percent from the Federal Government.

In short, we have two Federal grant-in-aid programs on a collision course with one another. Somehow, some way, there ought to be some means by which this could be better coordinated.

I am not seeking perfection, but the abundance of these conflicts in the last 5 to 6 years has had significant impacts on the environment.

Mr. REUSS. Well, I would end up this phase of the discussion by saying that both as a member of this subcommittee and as a member of the Joint Economic Committee, I need all of the help I can get from you on this concept of what maximum production should be.

Let me turn briefly to another interesting phase that was discussed by Dr. George and Mr. Howe—the international aspect of the environment.

It is encouraging that there will be in 1972 a United Nations International Environmental Conference, out of which may come some good things.

I happened to be over in the Federal Republic of Germany about a week ago and had a chance to have some lengthy discussions with the Chancellor and Foreign Minister and other governmental leaders there. And I suggested to them that West Germany and the United States both had the same problems of polluted rivers, polluted air, and rapidly less habitable land—the whole environmental gamut—and that both countries had a very considerable scientific and technological capacity. And many of the solutions to these problems could stand some scientific research and development and demonstration programs on new systems of mass transportation, new systems of composting garbage, disposing of solid waste, a better system of sewage disposal than the present 50-year-old system that we have, new systems of air pollution control and so on.

And it occurred to me that perhaps you have to start somewhere, but on an open-ended basis, available to other nations, and that the West Germans and this country could concert some of our research and development and demonstration programs in the environmental field, portion out the work, and do it on a joint basis, so that instead of working in isolation to see how to take phosphates out of detergents, we could do it jointly.

There was considerable receptivity to that idea and the Federal Republic has put their scientific adviser on the problem to see if there isn't some opportunity, on an open-ended basis, for jointly funded or jointly managed research and development programs.

I would be interested in the reaction of the panel to the idea of internationalizing our attack on the problems of the environment.

Mr. HOWE. I would volunteer that there are great opportunities in this area, sir. While my own organization is not involved in technical research, I sense from those who are that they are finding increasingly fertile lines of communication with specialists abroad and with developments abroad.

I would add that there are opportunities and, I think, almost responsibilities, for the United States, as I have implied, to offer its knowledge and experience in places where pollution controls, setting aside of open space, and the preservation of wildlife, are not foremost in the community mind because economic productivity is. We have a responsibility to generate a kind of sophistication about the environment, a sense which we are coming to rather late and after great deprivation of our own surroundings.

I think it is possible for very powerful pressure groups to arise overnight around the construction industries in rapidly developing countries, as they have, to a considerable extent in this country. In addition to exporting not just sheer technology, we should offer help in cultivating effective civic responsibility—what the League of Women Voters knows how to do so well—in developing countries.

Mr. REUSS. If the League of Women Voters could export the principle that women should be allowed to vote, for instance.

Mrs. CLUSEN. I might say it has been interesting to me to watch how the foreign policy part of the League's position, which it has long had, and the environmental business, which I have been involved in, are coming closer together and we are indeed finding some overlapping of interests.

I was thinking as Mr. Howe was talking of my recent involvement in the UNESCO conference at San Francisco on Man and His Environment, in which there was considerable discussion of exactly what you are suggesting—that we do more to regard the environment and pollution problems as worldwide and learn to share expertise and technological advances, without regard to national barriers.

Mr. REUSS. Mr. Hicks?

Mr. HICKS. No questions, Mr. Chairman.

Dr. SMITH. Mr. Chairman, I did have one other item of interest. The Coors Brewery in Colorado has come up with an idea: Because plastic and throwaway containers in which many products are sold constitute much of our solid waste disposal problem, they have gone back to the use of aluminum cans. As a result they offer 10 cents a pound for aluminum cans, and they recycle the use of them. In this fashion, they minimize the problem of disposal.

Though an inventive but not awe-inspiring answer, it is a start by one business to do something about the solid waste disposal problem.

Mr. REUSS. This brings up something which I think every panelist hinted at this morning, and I would like to ask a question based on it:

Is it the view of members of the panel that, in respect to pollution problems generally, efforts should be made—and the Government of course has to take the lead—to impose the cost of pollution control on industries and their consumers and thus that industries which discharge pollutants into municipal systems should by and large be compelled in some way to pay for those particular costs?

The users of bottles and containers should perhaps have to pay some sort of a tax which would be used for solid waste disposal, and the existence of which would also be an incentive, then, for them to do what Coors is doing in Denver, or to have returnable bottles or degradable cans.

Does the panel in general—and we can't get into legislative specifics here—subscribe to the idea that to the maximum feasible extent industrial degradation of the environment ought to be repaired by those industries that are causing the trouble, and that the cost should go into their cost of production?

Mr. HOWE. It is my view that what you are saying is not only fair and appropriate, but it is also the route to efficiency in the handling of wastes.

I would like to toss out the observation also that I am continually disappointed by the fact that when we enter into discussions with industrial representatives about the handling of waste materials—the prevention of pollution for example in the power industry—the material that comes out shows us how many millions of dollars the capital investment to prevent thermal pollution would be. But rarely are we given this figure as a percentage of the homeowners' or anyone else's utility rate.

I think that when such percentages are worked out this becomes a very small portion of the cost to the consumer. We have, across the land, been voting rather consistently to tax ourselves for new waste treatment, to get clean water. I think that if the additional costs of adequate air and water pollution control, were shown to consumers as a rather small portion of the cost of goods and services, which they are, we would be moving much faster toward what you are suggesting than we now are.

Dr. SMITH. Mr. Chairman, I want to speak to this, because there are arguments as to whether industry should bear the cost of environmental cleanup or whether it should be shifted to the consumer. In reality, this is the old textbook case of shifting and incidence of taxation. Any cost upon industry will find a reaction by the industry, depending upon the structure of the market in which they buy or sell. They may shift it backward in terms of reduction, or dampening down some wage increases. They may shift it backward in terms of reduced dividends to stockholders, and they may shift it forward in terms of the prices to consumers. There will be a series of options as to who ultimately pays the bill. It will be partly the management of the company, partly the consumers, partly the taxpayers, and partly the dividend holders, depending on the critical market situation of the firm.

I do share with Mr. Howe, however, the idea that if it is totally or partially shifted to the consumer, first it isn't going to be something of significant magnitude in most instances. Secondly, it may even make the company more efficient, and as a result not cause a significant increase in their costs. Thirdly, I am quite convinced that the American public is willing to pay this price.

There was an effort made by the Congress, of which the chairman knows full well, to raise appropriations from $214 million, what the two previous administrations suggested for funding the water pollution abatement act, $800 million. This could not have been done if there had not been a good groundswell on the part of the American people in behalf of this increase. They know this is going to cost money, they know somebody is going to have to pay for it, and they are pretty well aware of the fact it is going to be them.

Dr. GEORGE. Mr. Chairman, may I just say a few words on that? I suppose everything is more complicated than it would at first appear. And the answer to this, as Dr. Smith has pointed out, is exceedingly difficult and complex. I think one of the problems is that we have inherited a lot of difficulties, and it would be difficult to ask industry to clear up all the problems that we have created for ourselves in a couple of hundred years.

At the moment I live in Pennsylvania, and if you came up here I suppose I would be inclined to show you our assets, and we have a great State. But we have held this republic together for 200 years, and I am telling you I could show you some real blights too. I could show you acid mine drainage that would make you weep. I could show you strip mines that would make you sob to look at them. These things are done. We have cities and underneath them we have mines burning, abandoned mines, and some of the citizens' homes are actually sinking down into the ground in places. Now these things are actually occurring. They occurred partly because I think society evolves. When we were a pioneer community we took on the old world. We licked them partly because we had a good chunk of real estate and partly because at that stage in our society we could exploit our resources.

Today I think we are a lot more mature, and in the maturity of our society I think we achieve a sophistication whereby we have different value system judgments. And more than that, I think today we have the energy reserve whereby we can begin to repair some of the things we have wrought. As a pioneer economy I don't think we could. I think this becomes particularly important to remember when we export our technology to emerging nations. They are still trying to get the surplus energy that gives us the affluence we have. And they cannot afford some of the cleanup measures that we are now trying to institute.

We are at a stage in our technological maturity, our society's maturity, that we have never reached before. I think we can tackle these problems, I think it will take increased taxes, but very recently I heard a statement by a colleague of Mr. Howe that perhaps we are spending less of our gross national product on environmental quality today than we were a decade ago. The statement was made last week.

Mr. REUSS. I was glad to hear you refer to the recent successful fight for $800 million instead of $214 million appropriation for sewage treatment plant construction grants in the current fiscal year. As you know, there is another fight developing for full funding under the Federal Water Pollution Control Act of $1.25 billion for the sewage treatment construction grants programs for the next fiscal year. Can we rely on the help of you and your organization?

Dr. SMITH. I gather we continue to be the only conservation organization that is a registered lobbying group with moneys that come to us not being tax deductible. We have started a rather significant campaign to support the efforts of those who want to fully fund this program and I think the chance of it being accomplished are pretty good. If you will recall, we were warned all of the way through the last battle it wouldn't do any good, because even if we got the increased amount, this amount would be impounded by the Bureau of the Budget and it would not be spent. All Presidents are political animals, and I think they see the handwriting on the wall just as in this case we are assured the money will be spent.

Mr. REUSS. Yes; but keep up your vigilance, because it is not only necessary to get money authorized and appropriated, and obligated, and unfrozen, and spent, but to prevent its being stretched out so that it really does not do a job.

Dr. SMITH. Vigilance, Mr. Chairman, is more or less a way of life with us, so I appreciated the admonition.

Mr. REUSS. Mr. Indritz?

Mr. INDRITZ. All of the panelists mentioned the work of the Federal Government sometimes adversely affecting the environment. I believe all of you mentioned the importance of local organizations in monitoring and observing. And yet I was somewhat distressed, Mr. Howe, by your comment on page 4 that the citizen groups report they face difficulty in identifying and obtaining information that they require on public works projects, powerplants, pesticide and a host of other governmental proposals affecting the environment. I would like to ask whether all of you panelists are aware of a recent Magna Carta enunciated by Congress in the National Environmental Policy Act of 1969, which was signed just the first of this year.[1] Section 102 of that act specifies that all agencies of the Federal Government must include a detailed statement by their responsible officials with respect to major projects which will affect the environment. They must show in that statement the environmental impact of the proposed action, the adverse environmental effects, the alternatives to the proposed action, the relationship between the short-run and the long-run effects, and any irreversible or irretrievable commitments of resources which would be involved in the proposed action.

It then goes on to say—and this is what I would like to ask you about—that copies of these statements and the comments and views, which they must get from every agency of the Government, must be made available to the public as well as accompany the proposals to all existing agency review processes. My question to you is: Are your organizations publicizing this new Magna Carta, so that all local and civic organizations have a chance to obtain such information which Federal agencies must, under the law, give you now? Are you doing what you should, as concerned local organizations do to monitor the effects of these proposals?

Mr. Howe. Yes sir; we certainly will be reporting this development. And I certainly agree with you that it is a most important one and we are very hopeful it will help surmount some of the problems I have been describing. Perhaps I should have referred to it. However, this is performance to be anticipated, and we must remain hopeful it is as effective as the wording you read intends.

There is a related condition that almost alone justifies the existence of many citizen conservation organizations. The very complexity of environmental information requiring translation into civic understanding. I submit that there may be steps Federal agencies can take that will help everyone understand the full meaning of presently very complex project justification procedures, both in economic and scientific terms. This now is the very difficult work of many conservation organizations struggling to ride with agency programs and interpret constantly the nature of specific project development proposals and overall policy.

But I think what you are saying is a hopeful sign. I should have recognized it.

Dr. Smith. I think this is very effective. I want to add one thing: This is on the assumption of course that the environment is going to be No. 1 affected, and apparently No. 2 adversely affected. It is a very strange thing—there are bureaus or branches of the Government that feel their activities enhance the environment. This therefore, becomes very difficult because they do not feel that it is incumbent upon them to go through the processes of which you speak. I have discussed this with some councils and they have disturbed me greatly with their interpretation of it.

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[1] The text of the National Environmental Policy Act of 1969 (Public Law 91-190, 83 Stat. 852, January 1, 1970), appears in the appendix of this hearing record, pp. 327-331.

Mr. Indritz. May I suggest section 102(c) does not use the word "adversely."

Dr. Smith. It just says "affect."

Mr. Indritz [reading]:

> Shall * * * include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of human environment, * * *.

Therefore, if it improves the environment, they have to go through the procedure, getting the statements and review by all concerned agencies, and having those statements made available to the public.

Dr. Smith. This is very important information for us.

Mr. Indritz. My question to you was whether your organizations are taking steps to publicize this Magna Carta that was recently enacted into law to your local constituencies throughout the country?

Dr. Smith. We are in the process of doing this, and I think Mr. Howe indicated he was, too. The only reason for my concern is the fact that I felt that this language which you just read in the statute is in for some rather interesting interpretations by some of the agencies downtown. I alert the committee to this.

Mr. Indritz. If you get such interpretations, would you apprise the chairman of the committee of it?

Dr. Smith. I will be very happy to.

Dr. George. Mr. Chairman, I think we are dealing with a situation today where we have almost a bewildering array of acts and somebody has to review these meaningfully. I have yet to find a Federal agency that says their purpose in doing a particular job or following a particular action is to hurt the quality of the environment. They are all quite convinced that they are acting in the best interest of the American people, you see. They are fully convinced of this. Somebody with an ecological slant needs to review this. This is why I asked for this strong ecological review. I will grant you the Council on Environmental Quality is supposed to do this. But it is going to be a very big problem. You already have an ad hoc committee on the environment; you, Mr. Chairman, were instrumental in setting it up. You have 130 advisers on that committee. But even this is a handful of people. They have been concerned with ecology all of their lives, but they are overwhelmed. Ecologists are overwhelmed today. There are only a handful of them and they can't review everything. We will do what we can to review any actions as a result of this new Magna Carta, but the situation is going to be a lot more difficult. I think, than the act would indicate.

Mr. Indritz. You make an assumption which troubles me a little bit. You said the Federal agencies which are concerned feel they are working in the public interest on environmental matters. However, I think you overlook the fact that the statute requires a responsible Federal official to consult with, and obtain the comments of, any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. We all know that there are many Federal agencies that work at cross-purposes and have different points of view. Why don't civic groups, like yours, take advantage of these conflicting approaches of the different agencies. Thus, if the Corps of Engineers or the Bureau of Reclamation is engaged in a particular project, there may be a different point of view by the Agriculture Department, or by the Fish and Wildlife Service, or the Geological Survey. You could be very helpful in obtaining their contrasting points of view as the statute requires, and make them available to the public.

I suggest again that you ought to reexamine this great statute, section 102 of the act, and make it widely known to all of your constituent organizations.

Mrs. CLUSEN. Mr. Chairman, may I just say a word in response to the gentleman's question, because I do see the role of organizations much as you indicate in bringing out the conflicts between various parts of the Government. I think one of the problems which exists is that Federal agencies, when they refer to the public, do not always mean the same public we do. At least one Federal agency thinks of the public in terms of local government—planning officials, and so forth, not laymen. But we are aware of the act, and we will certainly do whatever we can to make it usable. I know we will all be hoping that there will not be a lag between promise and performance in it.

Mr. REUSS. We had a classic example of what you were just talking about, Mrs. Clusen, in connection with our subcommittee hearings on the degradation of San Francisco Bay. There—counsel can check me if I am not reporting this correctly—in a landfill issue before the Corps of Engineers, objection was made and requests to testify at a hearing were made by some 80 different individuals and conservation organizations, that were upset about the ecological effect the proposed landfill would have. But because a public agency, the California Resources Agency had said, for reasons unknown, it would not object to it, the corps went right ahead, did not hold a hearing, did not give these protesters an opportunity to be heard. They issued the permit, dismissing the 80 people as citizens who weren't entitled to be heard. Is that about right?

Mr. INDRITZ. Yes, but it is the chairman's view, and presumably the committee's view, that that ought to be changed.

Mr. REUSS. There are, also, many such cases.

Dr. SMITH. Mr. Chairman, we had a problem relating to the Water Valley Dam in Arkansas some years ago. This was authorized in 1938, and we have been opposing the appropriations for it. We finally thought we had detected a point that the corps had missed as to their own regulation and rulemaking procedures. They caught us, however, by pointing to a public hearing held on December 8, 1941.

Mr. REUSS. Well, thank you very much, Dr. George, Dr. Smith, Mr. Howe and Mrs. Clusen, for your extremely valuable contributions today to the subcommittee hearings.

We will now stand in adjournment until 10 o'clock tomorrow morning in this place.

(Thereupon, at 11:55 a.m., the subcommittee was adjourned, to reconvene at 10 a.m., Thursday, February 5, 1970.)

THE ENVIRONMENTAL DECADE

(Action Proposals for the 1970's)

THURSDAY, FEBRUARY 5, 1970

House of Representatives,
Conservation and Natural Resources Subcommittee
of the Committee on Government Operations,
Washington, D.C.

The subcommittee met at 10 a.m., in room 2154, Rayburn House Office Building, Hon. Henry S. Reuss (chairman of the subcommittee) presiding.

Present: Representatives Henry S. Reuss and Paul N. McCloskey, Jr.

Staff members present: Phineas Indritz, chief counsel; Josephine Scheiber, research analyst; J. P. Carlson, minority counsel, Committee on Government Operations.

Mr. Reuss. Good morning.

The Conservation Subcommittee will be in order for a continuation of its hearings into "Action Proposals for the Environment Decade of the 1970's."

We have with us this morning Mr. Ted Pankowski, conservation associate, the Izaak Walton League of America; Mr. Michael McCloskey, executive director of the Sierra Club, and there will be joining us shortly Mr. Charles H. Callison, executive vice president of the National Audubon Society, who is on his way from New York.

We welcome you here, gentlemen. Your statements under the rules will be admitted into the record in full.

Would you now proceed, Mr. Pankowski?

STATEMENT OF TED PANKOWSKI, CONSERVATION ASSOCIATE, THE IZAAK WALTON LEAGUE OF AMERICA

Mr. Pankowski. Thank you, Mr. Chairman.

I am Ted Pankowski, conservation associate for the Izaak Walton League of America. In behalf of my organization, and personally, I appreciate this opportunity to comment. In essence what I have suggested in my written statement are the following:

1. That an action program for the environment should get at the obvious problems first. The most pervasive of these are the contamination of our water and air. Fortunately, they appear to be the most manageable. With respect to our waters, one-third of the pollutants can be attributable to industrial sources, one-third to municipal sewage, and one-third to all others, including silt, pesticides, thermal discharges, and so forth.

For our air, 60 percent of the problem has been estimated to be attributable to the internal combustion engine, primarily motor vehicles. While these are nationwide and average rules of thumb, I believe if we get at these pollutants first, we will, as they say on campus, "Give the Earth a Chance." With respect to one of these problems—the municipal sewage treatment plant—if the administration's environmental message, to be announced next week, is unresponsive, I believe we will see a continuation of the "Citizens Crusade for Clean Water."

2. We should be moving toward a minimum of secondary treatment for municipal discharges and tertiary treatment for water resources which can be classified as environmental disasters. We all know such areas—the Passaic River, the Hudson River, Chesapeake Bay, Potomac River, San Francisco Bay, and so forth.

3. For industrial sources, we should be setting effluent standards on discharges with stiff penalties for violations, and environmental standards on marketable commodities, much as we have health and safety standards on them. I am convinced that without them, the free enterprise system, and the market economy as we know it, will come to an end.

Pollution problems will become so overwhelming that drastic curtailment of individual choices will be necessary, as undesirable as they may be. Many are already suggesting drastic curtailment, particularly on population and energy consumption, and while I disagree generally with that approach at this time, and would prefer to see us develop other options, such as cleaning up, their point is well taken. Pollution has literally backed us into a corner.

4. Government agencies must develop specific environmental criteria for their own programs—"rules of the game" based on ecological principles and the physical laws of nature and designed to protect natural environments.

A notable example of this need is demonstrated by our difficulties in altering navigable waterways, a situation about which this committee is particularly knowledgeable. There must be a shifting of the burden away from the public and public agencies and some presumptions established in favor of the continuation of life systems. I believe broad terms, like "environmental quality," "multiple use," and so-called "balanced development," are meaningless without some specificity, and certainly ineffectual, without such specificity, in meeting our concerns.

5. To facilitate establishment of environmental criteria, it would be desirable to have a nonlegislative joint committee of Congress to overview their development and to comment on them for the benefit of the standing committees. The executive now appears equipped through the new councils to handle its end of such a program.

And finally, I believe it is a pipe dream to require the public generally to change habits of consumption unless they are given meaningful alternatives and information. We do not have them now and options between polluting and nonpolluting products, services, and processes must be required, if necessary by litigation.

I personally have faith that, given such options, the American public will respond to environmental needs in their personal habits just as it has consistently responded to environmental programs that cannot be satisfied in the marketplace.

It seems to me that the average man is in a position to judge his contribution of taxes and other investments in relation to the physical world around him, but only when this relationship is unobscured by complex fiscal arrangements.

I would like to suggest that we explore an environmental trust fund, similar to the highway trust fund, to be made up of earmarked contributions from certain types of commodities and services, from direct appropriations, and from the sale of environmental defense Treasury bonds. This idea has often been discussed privately. Perhaps we should be considering it more seriously.

I appreciate this opportunity and will be pleased to answer any questions. Thank you.

(Mr. Pankowski's prepared statement follows:)

PREPARED STATEMENT OF TED PANKOWSKI, CONSERVATION ASSOCIATE, THE IZAAK WALTON LEAGUE OF AMERICA

Mr. Chairman, members of the committee, I am Ted Pankowski, Conservation Associate for the Izaak Walton League of America. These hearings should go far toward developing a consensus on an action program for improving our environment, and in behalf of my organization, and personally, I appreciate this opportunity. While my comments reflect League policy, the nature of these hearings dictates that they be entirely my own.

One hardly knows where to begin. As the committee's agenda brings out, our environmental problems are serious and many. The full meaning of "environmental quality" and "ecological integrity" reaches us slowly, and more often than not, painfully. And just as we have been urging Government to reorder priorities, conservationists have the obligation of putting their own priorities in order within the broad area of environmental concern. At the risk of being overly fundamental, I believe the Nation should start any action program at the point the Izaak Walton League started in 1922 when private citizens found it necessary to organize themselves, specifically to "call a halt" to the pollution of our waters, and today, of our air.

The contamination of vital air and water resources is most pervasive; it is extremely difficult to reverse; is most costly in terms of damage; and as few factors can, limits our options with respect to the allocation and use of these and of other natural resources.

I am sure there is no need to cite the grim statistics, except to repeat that nationwide and on-the-average the sources of water pollution have been roughly estimated to be one-third industrial, one-third municipal and one-third all other, including farm runoff, pesticides, thermal discharges, and so forth. For air, 60 percent of the problem results from the internal combustion engine, primarily motor vehicles.. If we did little else, I believe the elimination of these pollutants would, as they say on campus, "Give the Earth a Chance." Moreover, they are pollutants for which remedies are for the most part technologically available and economically feasible. They are also pollutants which the general public most readily understands and against which there would be the best opportunity for harnessing public support. The question is how, and in what order?

MUNICIPAL WASTES

Last year when the league participated in the "Citizens Crusade for Clean Water," I believe it was more than chance that some 40 organizations representing conservationists, labor unions, consumer groups, and professional societies, chose to go after a significant investment for water pollution abatement in the public sector, rather than to direct its efforts toward industry or even toward other environmental problems. There was a shared realization by all that building adequate municipal sewage treatment plants was a relatively manageable problem uncomplicated by the ebb and flow of our market economy. Then, as now, it is a question of providing adequate public funds and of improving the efficiency of the system.

While many of us have concrete suggestions in this regard, I don't wish to burden the committee with them now, except to say that if the administration's message on the environment expected next week is unresponsive, we can expect a continuation of the citizens crusade for the coming fiscal year.

There is one aspect of the program which has a definite bearing on your committee's continuing deliberations. Several months ago, FWPCA's Commissioner, David Dominick, announced that no Federal matching money would go to cities and States unless the facilities to be built were "secondary treatment plants." We believe this is a commendable step, in that it provides definite, goal-oriented criteria which must be followed if the Federal investment is to be effective. We would like to see this requirement tightened even further to require tertiary treatment in those river basins of the Nation which can properly be designated as environmental disasters. We all know them well—Lake Erie, the Passaic River, San Francisco Bay, the Potomac, and so forth. The setting of criteria such as this is not only sound in terms of what must be done, it gives us all a definite and concrete goal which is not obscured by vague definitions and rhetoric.

INDUSTRIAL POLLUTION

The same approach could and should be taken with industrial pollution. Our systems of water quality and air quality standards are necessary steps toward improvement without imposing unequitable hardships on any segment of industry or of the public. The standards by themselves, however, will be ineffective without some direct correlation between the quality of the receiving resource, air and water, and what actually comes out of the pipe. Many of us have urged in the past and now urge again that we go into a system of effluent standards, for both air and water, imposed on an industrywide basis, and on the basis of types of marketable commodities, such as motor vehicles. Standards of conduct for man and his activities instead of for the world around him would give us a measurable relationship between what is being dumped by whom and the associated costs for cleanup and for prevention. I am convinced that without clear standards on the sources of pollution with costs imposed at the source, our system of free enterprise within the context of a market economy cannot continue to exist. Pollution problems will become so overwhelming that drastic curtailment of individual choices will have to be made across the board.

GOVERNMENT

Standards with respect to the restoration and protection of our environment should especially be championed within Government agencies and for the programs they administer. Broad policy statements, such as "multiple use" and "balanced development" are meaningless unless they are specified by concrete guidelines. I was pleased to see, for instance, in a recent report by the National Water Commission, a statement of ecological principles forwarded to the Commission by a noted panel of environmental experts. The report, dated December 31, 1969, is one of the first specific outlines of the kind of physical consideration which should be applied to any program.

A notable example of the need for some "rules of the game" is the responsibility of U.S. Army Corps of Engineers with respect to the total resources of navigable waters, a situation with which we are all familiar. What I, and several of my colleagues, are seeking to do in this area is to establish, through the courts if necessary, a set of criteria which should be applied in judging the merits of dredge and fill applications. For example, the better reasoned case law coming out of Wisconsin, Minnesota, Massachusetts, and California courts points to the conclusion that there is a violation of the public trust in deeding away submerged lands unless—

(1) The landfill accomplishes a public purpose pursuant to an established public policy.

(2) The fill does not seriously or dramatically alter the nature of the resource as a resource.

(3) The public receives fair market value for the transfer.

(4) Due process is followed in the granting of submerged lands. And finally, that public bodies which have "trust" responsibilities do not entirely relinquish control.

These criteria, in effect, give the public the benefit of the doubt that rivers were meant to remain rivers and they shift the burden of proof away from the public and its agencies to those whose actions seriously alter or modify natural environments. Recently, I noted an item out of Michigan where the House Conservation and Recreation Committee of the State Legislature is considering such an approach to the point of requiring defendants in evironmental law suits to prove that there were no alternatives to the polluting activity or that the action was vital to the public interest. The test of "necessity," incidentally, is one which my colleagues and I hope to apply to Hunting Creek.

The point in all of this is, of course, that if we have to make public policy on an ad hoc basis, or interpret environmental policy without some rules for the game, we will surely exhaust ourselves and our resources.

On the national level, the executive branch now appears well equipped to foster the development of specific criteria among government agencies. The President's Council on the Environment, the Council of Environmental Advisors, and the requirements of the newly-enacted Environmetal Quality Act should permit executive agencies across the board to modify and adjust their programs so as to meet the national commitment to environmental improvement as required by law. I believe it would be logical and desirable to establish within Congress a nonlegislative Joint Environmental Committee to overview these criteria and comment on them for the benefit of the Standing Committees.

THE CITIZEN'S ROLE

The private citizen today, despite his growing concern over air and water pollution and the deterioration and crowding of his community, has few options available to him in terms of adjusting his own habits to coincide with his concerns. He cannot choose a motor vehicle that does not pollute or products that defy disposal. It is fine to say that we are too affluent and too concerned about the satisfaction of wants to change our living styles. The fact of it is that there is little opportunity to change and too little information reaching the public on specific products that compound our environmental problems. None of us would expect our wives to beat the laundry against rocks in some polluted stream, and in the shelves of the supermarkets are few admonitions that this detergent pollutes while this one does not.

Public demands for outdoor amenities and recreation opportunities are legitimate, yet they can never be satisfied without destroying the nature of our parks and refuges unless we have such the options of sufficient opportunity available to us.

I personally believe that the public generally would support changes in their consuming habits provided meaningful alternatives were available just as the public has supported public spending for environmental programs that cannot be satisfied by the market. Options must be encouraged; if necessary, forced by regulations or through the courts. The Consumer Class Action Jurisdiction Act offers the kind of legal remedies which should be available for the protection of environmental rights and the redress of environmental grievances.

Finally, and perhaps most importantly, the general public must be able to see the relationship between the taxes he pays and the bond issues he approves and results. Fiscal policy has become far too complex for the average man to fathom and relate to the world he lives in. In this light, I believe there would be considerable support for an Environmental Trust Fund, operating much as the Highway Trust Fund, with sources of revenues earmarked for pollution abatement and other resource programs. Such a fund could be developed in conjunction with Environmental Savings Bonds, perhaps matched by contributions from direct appropriations, much as the war bonds provided the capital for that other major test of national will and commitment more than 20 years ago. This idea has often been discussed privately. Perhaps we have reached the stage where it may be essential.

I have, in closing, several resolutions adopted by more than 700 delegates to the league's national convention in Cincinnati last year relating to several areas of the committee's concern. I respectfully refer them for your review. Thank you.

RESOLUTIONS ADOPTED BY THE IZAAK WALTON LEAGUE OF AMERICA, 1969 NATIONAL CONVENTION—JULY 8–10, 1969, CINCINNATI, OHIO

RESOLUTION 2. YOUTH POWER IN ENVIRONMENTAL CONSERVATION

Whereas bettering our environment depends upon public attitude and action; and

Whereas public attitudes and policies will be determined in large measure by the youth of today: Now, therefore, be it

Resolved, That the League intensify efforts to stimulate youth power by creating awareness in them individually and in their organizations to the end that they become directly involved in the critical environmental issues of our time.

RESOLUTION 4. DDT

Whereas the use of DDT and like persistent chemical pesticides have an adverse effect on most forms of life and seriously threaten the quality of the environment; and

Whereas other pesticides and control measures have been and are being developed which do not have such effects: Now, therefore, be it

Resolved, That the League supports enactment of legislation to ban the use of DDT and like persistent chemical pesticides.

RESOLUTION 5. MULTITERRAIN VEHICLES

Whereas the increasing use of motor vehicles capable of navigating most terrains, including snowmobiles, dune buggies, motorcycles, helicopters and tote-goats, have made possible heavy visitations of hitherto undisturbed and inaccessible environments; and

Whereas the use of such vehicles, though a legitimate outdoor recreation experience, creates the possibility of harassment of wildlife and the destruction of their habitats, of the trampling of plant life, stimulation of erosion, and of interference with equally legitimate wilderness and solitude experiences; and

Whereas the protection of these natural values and resources will become extremely difficult without appropriate regulation of multiterrain, all purpose vehicles: Now, therefore, be it

Resolved, That The Izaak Walton League supports the adoption and strict enforcement of regulations to govern the use of such vehicles by Federal, State, and local authorities as appropriate, and urges fair standards to minimize adverse impacts on natural environments such as but not limited to, the licensing of drivers; prohibitions on the running of game animals and on use in designated or potential wilderness areas; the designation and marking of vehicular trails; restrictions on noise levels and speed; and such other measures as are consistent with the intent of this resolution; and be it further

Resolved, That the industry developing and marketing such vehicles be encouraged to undertake such training and public education programs as will foster appreciation of the natural environments which these vehicles make possible.

RESOLUTION 7. OPEN BEACHES

Whereas there is a common law right of citizens of access to the sea, oceans, and Great Lakes and to the enjoyment of the shoreline and beaches thereof; and

Whereas the natural heritage of beaches and shorelines should be available to all people of this and future generations; and

Whereas this traditional right is increasingly being thwarted by fencing, posting and other shoreline obstructions; and

Whereas these public rights can be assured without infringing on private property rights: Now, therefore, be it

Resolved, That the league supports the concept that there should be a prima facie determination, by legislation or by the courts, that the right of exclusive use to the shoreline of the sea, oceans, and Great Lakes, had never been reserved solely for littoral owners; and be it further

Resolved, That there should be a prima facie determination that the public possesses a right to the use of such beaches, which presumption must be rebutted by those who seek to exclude the public by erecting obstructions.

RESOLUTION 8. GOLDEN EAGLE PROGRAM

Whereas the Golden Eagle program was authorized by Congress in 1965 to provide funds to the Land and Water Conservation Fund for additional recreation lands; and

Whereas public participation in the Golden Eagle program steadily increased from 90,400 in 1965 to 692,000 in 1968, with a possible increase to 800,000 permit holders in 1969; and

Whereas this steady increase of nearly 100 percent in 4 years indicates wide acceptance of the program by the American public who voluntarily contributed more than $18 million for the purchase of park and recreation areas; and

Whereas the 90th Congress, despite these gains, voted against the continuation of the Golden Eagle program beyond 1970; and

Whereas recent appropriations to the Land and Water Conservation Fund have been woefully inadequate, resulting in the curtailment of park services and jeopardizing completed acquisition of many park and recreation facilities already authorized by Congress: Now, therefore, be it

Resolved, That the league reaffirms its wholehearted support for continuation of the Golden Eagle program beyond 1970; and, therefore, be it further

Resolved, That Congress and the administration be urged to recognize the serious gap which has developed between appropriations and authorizations for needed public park facilities, and in addition to restoration of the Golden Eagle program, take such other measures as are necessary to meet the goals established by the Land and Water Conservation Act.

RESOLUTION 9. ALASKA RESOURCES

Whereas the discovery of vast oil deposits on the Arctic slope of Alaska promises great and rapid economic growth in that State; and

Whereas this economic growth will have profound effects on the social and cultural development of Alaska and potentially on its other resources such as fish, wildlife, forests, scenery, wilderness and recreation opportunity; and

Whereas the Arctic slope in particular, and all of northern Alaska in general, is a fragile land which can recover from abuse, if at all, with extreme slowness; and

Whereas the long-range values involved are incredibly important to Alaska and to the rest of the United States and thus must be wisely conserved and developed: Now, therefore, be it

Resolved, That the Izaak Walton League of America seek and avail itself of every opportunity to consult with and urge the agencies of Government (Federal and State), industry, universities, the public, news media and all other segments of society to take such actions as will insure that the vast and important natural resources of the State of Alaska are not damaged or destroyed by its economic development.

RESOLUTION 10. AIR POLLUTION CONTROL HEARINGS

Whereas regional hearings to establish air quality criteria will be held at 57 locations throughout the country under the Clean Air Act of 1966; and

Whereas these public hearings will be extremely important in determining health and safety standards for our air for some time to come; and

Whereas active public participation is being encouraged by such groups as the League of Women Voters, the Conservation Foundation and by the Clean Air Committee of the Izaak Walton League of America: Now, therefore, be it

Resolved, That the League urges its chapters and State divisions and the public the generally to inform themselves of these hearings and to participate in them fully; and be it further

Resolved, That the Izaak Walton League of America hereby reaffirms its position that maintenance of clean air is a public necessity and that no man or agency, whether public or private, has a right to degrade this vital resource.

RESOLUTION 13. INVESTMENT TAX CREDIT FOR POLLUTION CONTROL

Whereas pollution control facilities are desperately needed in America; and

Whereas every inducement should be given to promote the immediate construction of pollution control facilities; and

Whereas Congress is considering rescinding the 7-percent investment tax credit: Now, therefore, be it

Resolved, That the Izaak Walton League of America supports the continuation of the existing 7-percent investment tax credit for industrial pollution abatement facilities.

RESOLUTION 14. CHESAPEAKE BAY

Whereas the Chesapeake Bay and its multistate watershed is a biological entity generally recognized as the world's greatest estuary; and

Whereas Chesapeake Bay possesses great charm and beauty to the citizens of the United States and ranks among the most productive and heavily utilized waters of the world; and

Whereas while Chesapeake Bay has suffered from past abuses, it still possesses vast economic value to the Nation; and

Whereas present advances in technological development and population growth pressures threaten the immediate and distant future to the Chesapeake Bay: Now, therefore, be it

Resolved, That the Izaak Walton League urges the entire body politic of the States of Maryland, New York, Pennsylvania, Delaware, Virginia, West Virginia, and the District of Columbia as represented by their elected officials and governmental departments to take promptly all necessary steps to develop workable, long-range, comprehensive plans for the management, protection, and preservation of this resource, now and for the future; and that it urges the States to cooperate in any effort to implement a coordinated approach to the management and use of Chesapeake Bay in order to protect this resource for future generations; and be it further

Resolved, That the Izaak Walton League of America pledges its unrelenting support and assistance in the promotion of this endeavor.

RESOLUTION 18. LANDFILLING AND WETLAND DRAINAGE

Whereas less than ⅛ of the surface area of the United States is in water constituting an irreplaceable natural resource on which all our lives depend; and

Whereas there is no substitute for these water resources to serve multiple human needs: and

Whereas these water resources are continually being destroyed by unnecessary landfillings and wetland drainage diminishing wildlife habitats, contributing to pollution, encouraging urban blight, and interfering with traditional public rights of recreation, navigation, open space and esthetics; and

Whereas landfilling and wetland drainage continues increasingly as a destructive force resulting in the irrevocable loss of our vital water resources: Now, therefore, be it

Resolved, That The Izaak Walton League of America expresses its opposition to landfilling and wetland drainage of water resources, whether by public or private agencies; and be it further

Resolved, That all public agencies having responsibilities in this regard be encouraged, and if necessary, required by legal action, to exert their full authority to protect from nonwater oriented developments the rights of the public to make full beneficial uses of their water resources.

RESOLUTION 19. PROTECTING LAND OF SPECIAL VALUE

Whereas every year large tracts of land in the United States are converted from natural or agricultural condition to urban, industrial, commercial, or traffic use; and

Whereas much of the pristine plant cover has been altered or removed; and

Whereas the need for natural areas for recreation and for enjoyment and for the study of nature increases because in population and increased leisure time; and

Whereas future generations should be permitted to enjoy as much of the beauty of our country as is our privilege: Now, therefore, be it

Resolved, That the League reaffirms its position of taking active steps to protect and preserve areas of special value in their natural state.

RESOLUTION 20. CREATION OF A FEDERAL ENVIRONMENTAL TRUST FUND

Whereas abuse of the natural environment threatens man's health and welfare irreversibly; and

Whereas man's living space is now grievously fouled by polluted water, air, and soil; and

Whereas responsible leaders in the Nation give us but few years to stop despoiling our environment if we wish to survive and live decent, productive and rewarding lives; and

Whereas correction of this condition demands immediate commitments of large sums of money and effort; and

Whereas the pollution abatement program authorized by Congress has not been funded by essential appropriations; and

Whereas there is precedent for the establishment of special funds to finance special programs such as the Highway Trust Fund, which method has been proved eminently successful: Now, therefore, be it

Resolved, That there should be established by Congress a dedicated trust fund for alleviating water, air and other environmental pollution to be known as the "Environmental Improvement Trust Fund" or similar name; and be it further

Resolved, That regular sources of revenue should be found and earmarked for deposit to such Fund in amounts adequate to restore and preserve our living environment.

RESOLUTION 24. LAND ACQUISITION PROCEDURES

Whereas in many portions of the country, action to meet recreation, watershed, and other public natural resources requirements involves considerable acquisition by the public of private property; and

Whereas appraisal, acquisition, and resident relocation procedures employed by public agencies should give due consideration to the rights and needs of private owners, particularly resident owners; and

Whereas there are increasing complaints from the private sector regarding land appraisal and acquisition practices of the Government: Now, therefore, be it

Resolved, That the Izaak Walton League of America requests The Public Land Law Review Commission or other suitable national agency to conduct a comprehensive evaluation of law and public agency procedures governing the appraisal and acquisition of private properties and relocation assistance for residents.

RESOLUTION 25. SUPERIOR NATIONAL FOREST

Whereas there is urgent need to block up and improve Federal and State patterns of land ownership within the Superior National Forest to permit increased efficiency of management by the U.S. Forest Service and by the Minnesota Department of Conservation; and

Whereas most of this can be accomplished through established land exchange procedures between the U.S. Forest Service and the State of Minnesota; and

Whereas there are in Minnesota 81,790 acres of Federal lands within the Beltrami Island redevelopment project, now under lease to the State, and 42,000 acres managed by the Bureau of Land Management plus an estimated 5,000 acres in unsurveyed islands which are surplus to the needs of the United States, but have high value for exchange purposes: Now, therefore, be it

Resolved, That the League seek transfer of these Federal lands to the U.S. Forest Service to be used for land exchanges with the State of Minnesota and expedite necessary blocking up of Federal and State ownerships for sound and efficient management.

RESOLUTION 26. AIR POLLUTION RESOLUTION

Whereas air pollution is a major factor contributing to the present deteriorating environment in the United States and the world; and

Whereas this condition is threatening the very existence of the human species and all forms of life on earth; and

Whereas internal combustion engines, jet motors, incinerators, atomic reactors, power stations and industrial plants are the principal producers of toxic and dangerous air pollutants (carbon monoxide, hydrocarbons, and oxides of nitrogen and sulfur) in the United States: Now, therefore, be it

Resolved, That The Iaak Walton League urges the National Air Pollution Control Administration and the Federal Department of Transportation to proceed with all deliberate speed to carry out its research, development, and control responsibilities in the area of air pollution abatement.

RESOLUTION 27. COUNCIL OF ENVIRONMENT ADVISORS

Whereas a burgeoning population and its activities are placing increasing pressures on limited resources of soil, woods, waters, wildlife, atmosphere, open space and all other elements that contribute to a healthful, satisfying and rewarding environment; and

Whereas such pressures have already resulted in serious deterioration of the environment and threaten to destroy the high quality of life which is the right of every citizen; and

Whereas a multiplicity of Government agencies are engaged in programs and activities which affect the environment, but which are too often narrowly focused as to objectives and pay scant attention to overall environmental considerations in their planning and operation; and

Whereas a variety of proposals have been advanced to create a Council of Environmental Advisors, or comparable commission of instrument, at top most level to carry on continuous studies of environmental matters, to make reports and recommendations to the President, the Congress and the public as to the status of environmental quality, and to provide a base of knowledge that will encourage integration of environmental concepts into all appropriate Federal and State programs; and

Whereas such a Council has now been established by the President to advise him and to coordinate cabinet-level activity with respect to the environment; and

Whereas other measures will be helpful in supplementing the Council, such as the adoption of environmental criteria by all Government agencies: Now, therefore, be it

Resolved, That The Izaak Walton League of America commends the formation of the Environmental Quality Council, but encourages further efforts to supplement the Council in assuring a healthy, satisfying and rewarding environment for all people; and be it further

Resolved, That the League urges the immediate appointment of task force committees by the council to consider and to expeditiously report on such problems, as protecting the environment of Alaska in the face of oil development on the Arctic Coast; the acquisition of funds for national parks and wildlife refuges; and other pressing environmental problems.

RESOLUTION 28. FLOOD CONTROL

Whereas present methods of planning and constructing flood control programs are wholly inadequate from the overall standpoint of environmental qualities; and

Whereas these programs inherently eliminate vast areas of land upstream of structures before any downstream protection can be provided; and

Whereas conflicting programs of land drainage and flood control are costing untold billions of dollars which mutually cancel each other out; and

Whereas Federal, State and local policies actually encourage the invasion of healthy flood plain areas in connection with flood control programs, and in fact are sometimes based upon speculative real estate values as a portion of the benefits, and tend to amplify the very problems they are designd to solve: Now, therefore, be it

Resolved, That The Izaak Walton League of America reaffirms its call for a full reevaluation of flood control programing and cost effectivenesses, to the end that flood control structures be considered as secondary alternatives to: preservation and rigid zoning against development in all remaining undisturbed flood plains; restoration of badly managed flood plains, including the elimination of agricultural practices wherever erosion, pesticides or fertilizers may enter adjacent watercourses; gradual removal of building and similar structures adverse to flood plain restoration wherever possible; and a national program of flood plain reforestation and maintenance in hydrologically sound condition; and be it further

Resolved, That all levels of government enact and enforce legislation requiring flood plain zoning and control consistent with these objectives before any funding or construction of needed flod control structures can be initiated.

RESOLUTION 29. TIMBER MANAGEMENT

Whereas the accumulation of slash and debris from timber harvesting operations create an insurmountable fire hazard; and

Whereas the unnecessary and destructive use of bulldozers destroys the future recreational use and beauty of our forest lands and streams: Now, therefore, be it

Resolved, That The Izaak Walton League of America requests the U.S. Forest Service to take a new look at its method of timber management, giving more serious thought to the scenic and recreational values of our forest lands and streams; and be it further

Resolved, That the Forest Service set up rigid standards of fire prevention through proper slash disposal and for the elimination of unnecessary erosion and stream pollution in all areas of timber harvest operations.

Mr. Reuss. Thank you, Mr. Pankowski.

Mr. McCloskey?

STATEMENT OF MICHAEL McCLOSKEY, EXECUTIVE DIRECTOR, SIERRA CLUB

Mr. McCloskey. Mr. Chairman, I am Michael McCloskey, executive director of the Sierra Club.

We welcome this opportunity to add our voice to others in commending members of this committee for calling for designation of the 1970's as the environmental decade.

Many scientists believe this may be the last decade in which man can still stave off disaster for the earth's ecology. Nothing could be more appropriate than for this committee to be reviewing policies which have brought us to the edge of disaster and to chart new directions.

For us to avert disaster, we must change many of our usual ways of thinking. This country's economic and political institutions may be geared to this type of thinking, but we cannot continue with it much longer.

First, we cannot continue to plan as if there were only social, economic, and political realties, but not biological and physical realities. There are strict limits to resources and their capacity to endure insult. A healthy and stable biosphere must be a prime goal of all public policy and planning. If we forget to recognize this goal, degradation of the habitat for life will continue until we can no longer ignore it, and irreversible trends may have then set in.

Second, the parameters of ecological health are not negotiable. Nature has its law of limits. Absolute results ensue when certain thresholds are crossed, whether our political and economic institutions care to recognize them or not. Techniques of accommodation and compromise, which are characteristic of the political process, may fail completely if they do not understand where ecological thresholds exist.

Regardless of political rationalizations, a certain amount of auto emissions in a given air basin may produce photochemical smog. A certain amount of fertilization in a closed water body may produce irreversible eutrophication. With a few more degrees drop of temperature as a result of air pollution, a new ice age may begin. Conflicts threatening results of this sort cannot be compromised. Hard choices must be made, or hard results will ensue.

Third, we cannot continue to treat our environmental problems in an ad hoc, after-the-fact fashion. We have a society composed of a host of forces that are conducting piecemeal warfare on the environment. Each does as it pleases, and acts as if its small contribution were not cumulative. We need central institutions, keeping track of cumulative effects, that will set ground rules for what can and cannot be done. We must curb narrow, mission-oriented institutions and bring broadly-oriented ones into existence.

These new habits of thinking will not come easily, but they are, in our estimation, the key to a change of environmental direction. With them, new policies, programs, and mechanisms can be developed to reverse inimical environmental trends.

GROWTH POLICY

The principal implications of changed ways of thinking come in the field of growth. Historically, Western civilization since the enlightenment has looked to growing population, and technical and industrial development as the harbingers of progress. Modern demographers and population biologists are showing us that we cannot project historical growth rates indefinitely. Physical impossibilities unfold with the projections, and well before that time human and environmental stress becomes acute.

The human race should not be trapped by historic patterns. We must redefine progress in terms that will allow an optimum level of welfare and environmental health to be sustained indefinitely. We must draw this definition with ecological principles of sensitivity and finiteness in mind. This redefinition will point toward stable population, curbing consumption, abandoning planned obsolescence, and arbitary styling changes, and recycling a limited quantity of waste products. We must convert an economy based on mass consumption of short-lived, disposable products to one based on controlled consumption of long-lived recycled products.

All the mechanisms of government and public policy should be reoriented to encourage this: Tax writeoffs, and deductions, subsidies, research, underwriting guarantees, and grants-in-aid. While we may not aim totally at a no-growth economy, we need to make sure that only ecologically acceptable types of growth are allowed, such as in services and the development of quality in products.

FOREIGN POLICY

The political and national separations among the human race may make it difficult to conceive of unified policies for treating the earth's ecosystem. Yet the logic of the perception of the planet as "spaceship earth" suggests that this Nation should do everything in its power to pursue the implications of that logic. Our foreign policy should aim not only at international stability, but at ecological stability. In charting our course, this goal should be kept paramount.

Our economic assistance, technical aid, trade policies, alliances, and military policy should assure that the American influence is an ecologically beneficial one. It is not today. We are exporting a pattern of ecological ignorance and devastation. We cannot preach to the world about ecological responsibility until we practice it.

ENVIRONMENTAL CONTROL

This Nation has now made a start toward revising national policy to meet environmental needs.

A good start is represented by the legislation Congress recently enacted to establish an Environmental Quality Council. Further revisions in policy are needed as I have just outlined.

When the new council is operating, it will help give the Nation early warning of dangerous environmental trends: Rising radiation levels, pesticide buildups, weather shifts and average temperature changes, and changes in patterns of pollution, including distribution and composition. For the first time, data will be drawn together comprehensively and projected. What will we do with this data?

Obviously preventive action should be taken. A strong, central agency should exist to take this action. If responsive action is fragmented among existing agencies, the action will probably not be preventive but remedial, and the response will be hampered by limited authority, data, and understanding. Just as the data must be consolidated for early warning, so also must authority for preventive action.

An environmental control agency should be established to carry forward action programs over a broad spectrum: Air and water pollution abatement, radiation control, noise suppression, pesticide, drug, and additive regulation, and weather modification.

Individuals, firms, and agencies should not be able to act unilaterally in degrading commonly shared ambient conditions and resources, nor should they be able to force unwanted substances into widely consumed commodities. No public agency now is really equipped to guard the public against these infringements of environmental rights. One ought to be, and it ought to be able to move with assurance, force, and effectiveness. The freedom of action of polluters will be curtailed, but their freedom of action now comes at the cost of everyone's right to a clean and healthful environment.

LAND POLICY

This Nation now has nothing approaching a national land use policy. Even such an idea may seem unworkable; yet Federal policy, in its myriad forms, has a profound impact upon what happens to the American landscape. Federal aid programs for freeways, dams, and agriculture; defense spending programs; and mortgage insurance all are prime forces in determining where urbanization and industrialization occur and how far they go.

The Federal Government is a prime force in shaping land use, yet it disavows responsibility for planning what it prompts. Meanwhile, more and more problems stemming from unplanned development escalate back up to the Federal Government.

It is time we had a national land used policy. This might consist of three parts: (1) A program of Federal acquisitions; (2) conditioning Federal grants on the basis of acceptable planning; and (3) reshaping Federal programs to make sure adverse impacts are avoided. Obviously, Federal action in pursuit of each part of this policy would have to be based on well-framed plans.

The Federal Government already has well-developed programs to preserve some of the most fragile and unique portions of America's land heritage. Acquisitions for these programs should be pushed forward vigorously to conclusion, both to avoid irreversible losses and to safeguard examples of native American ecology that may guide us in restoring the damaged American environment. I am speaking of programs such as the National Park System, the Wild and Scenic Rivers System, and natural area systems. Moreover, we need a system of protected estuaries and ocean and island sanctuaries. The Land and Water Conservation Fund should be extended to accelerate completion of this task of safeguarding the most vulnerable parts of the Nation's environment.

The Federal Government currently conditions its various grant-in-aid programs to assure compliance with a wide variety of national goals. It should add the goal of assuring sound State land-use planning. Before major construction grants are given to State agencies, such as highway departments, it should require comprehensive State planning to control the siting and spacing of industrial facilities and the routing of communication corridors. These are facilities which have the most profound effect on environmental quality. The plans should guarantee that these facilities do not invade dedicated biological and recreational reserves and historic areas; that they are clustered to avoid area sof vulnerable ecology, such as estuaries, or scenic terrain, or tracts needed as open space.

Special State commissions should be established to regulate development in particularly valuable regions, such as the coastline, bays, and estuaries. California has provided a model in its Bay Conservation and Development Commission for San Francisco Bay. Each State should also be required to prepare and implement a State open space plan—a plan which will show how a permanent reserve of open space will be maintained.

Finally, the Federal Government should take steps to assure that its own construction activities are in accord both with State land-use plans and the conservation programs of other Federal agencies. Its dams should not invade a State wild river, and its freeways should not bisect parkland and wilderness.

LEGAL ACTION

Many fine programs are established by Congress, but they often are not implemented to achieve their aims. Administrative indifference or hostility frustrates their purpose. Mechanisms should be provided to ensure that this is not the fate of environmental legislation.

Congress has commissioned corps of lawyers to watchdog other programs to overcome these dangers, such as in the rural legal assistance program. We need a program of environmental legal assistance to provide low-cost legal resources to force compliance with environmental laws. Polluters can be sued; injunctions sought to restrain freeway builders from disregarding environmental safeguards; mandamuses can be obtained to compel wilderness reviews; and declaratory judgments can be issued to settle questions of environmental law.

Citizen environmental organizations are now filing such actions, and many lawyers are volunteering their time. Important case law is being made, but progress is slow. We are starting from the beginning; our standing is challenged; and the costs of big cases is becoming heavy. We will win more and more cases, but a Government which believes in the importance of the laws it passes should provide the legal support to ensure those laws are observed.

Moreover, our right to be in court should not be challenged. Presently, the Justice Department is uniformly resisting the right of environmental groups, without an immediate and direct pecuniary interest in the question at issue, to have recourse to the courts for the redress of their grievances. Lower courts, following the Storm King decision, are increasingly inclined to grant standing, but two cases involving the Sierra Club alone are now before courts of appeals on this question. We hope the Supreme Court will soon have a clear opportunity to settle the question so that there is no doubt about our right to enter such cases to protect the interests of a broad class of the public.

The Federal Government could also help accelerate recognition of environmental rights and develop new causes of action if it were to enact a constitutional amendment setting forth a Bill of Environmental Rights. Much of the import of such an amendment may be implicit in parts of the existing Bill of Rights, but we need a definite statement of those rights early in this environmental decade. Such a statement will make it clear that Congress does intend to make this a decade in which these concerns are paramount.

Mr. Reuss. Thank you, Mr. McCloskey. Mr. Callison?

STATEMENT OF CHARLES H. CALLISON, EXECUTIVE VICE PRESIDENT, NATIONAL AUDUBON SOCIETY

Mr. Callison. I apologize, Mr. Chairman, for my lateness this morning. It was a result of the usual delay on the Penn Central commuter train, which made me miss the 8 o'clock shuttle and take the 9 o'clock and it simply underscores for me personally one of the points I intended to make in my statement.

I thank you for the honor of an invitation to take part in your timely reexamination of our sense of values and national priorities as we enter a new decade. And, Mr. Chairman, it is an honor to be associated with my distinguished fellow panelists, both very good friends of mine.

The question before the subcommittee is the most pressing one facing the Nation: Will the seventies turn out to be the turning point in man's collision course with the nature that sustains him? Or just 10 more miserable years down the road toward ecological disaster?

I have the privilege of representing one of America's oldest and largest citizen conservation organizations. We have 88,000 members—twice as many as only 4 years ago—and 160 local chapters, all increasingly militant on the issue of environmental deterioration.

As the chairman of our board of directors was quoted in a recent issue of Fortune, the Audubon Society was formed some 70 years ago to save some endangered species—the egrets and other plume birds that were being exterminated by the feather hunters. We are still working at the same task—except now the endangered species we are chiefly concerned with is man himself.

Our society supports all the traditional and time-honored conservation programs that have evolved through past decades to preserve some wildlife, wilderness areas, and scenic beauty for the enjoyment and inspiration of the people.

These are all requirements of an environment in which people can live like humans, not animals. And preservation of our forests and green spaces serves an even more critical ecological function.

Scientists are warning us that the United States has become an oxygen deficit area: We are burning up our life-supporting oxygen faster than green plants, through photosynthesis, can replenish it.

This means we must cease paving over thousands of acres of good land annually. We must stop the chemical defoliation of forests, and stop using the poisons that inhibit photosynthesis in marine plantlife. In all of these technological assaults upon nature, we risk disruptive changes in climate itself.

We believe our soil, water, forestry, and public land conservation program should be better financed and made more sensitive to ecological relationships. The Soil Conservation Service, for example, has been too heavyhanded in its manipulation of streams and destruction of natural flood plains and marshes. The U.S. Forest Service has often gone overboard in its use of chemical insecticides and herbicides.

Encouraging an ecological conscience in all Federal agencies is one of the functions we hope will be performed by the new White House Council on Environmental Quality.

But the environmental decade calls for drastic innovations and some revolutionary changes in traditional policy. We earnestly recommend consideration of the following:

1. Change our concept of "progress," and limit growth. "Progress" has meant growth in the American lexicon. A rapidly growing human population, more people in every hamlet, town, and city at every census-taking, more and bigger industry, taller buildings, more highways, more automobiles every year on those highways, more products rolling off the assembly lines in each industry this year than last year—these have been the American goal. The goal has to be changed if we are not to destroy the quality of life and, ultimately, life itself.

Most of our big cities should not be allowed to grow larger, and growth should be strictly planned and directed in our smaller cities and new cities.

Human population must be stabilized. So must economic growth. These are revolutionary ideas, but I believe they can be translated into national policy without revolutionary changes in our form of government and without loss of human freedoms. Indeed, progressive loss of freedoms is inevitable unless we do place limits on growth.

2. We must, as a Nation and a people, face up to the cost of pollution control. This means immediately Mr. Chairman, appropriating the full $1.25 billion that is authorized by Federal law for sewage treatment grants in fiscal year 1971. It means revising the authorizations upward to help municipalities get on top of the sewage problem in the next 5 years.

It also means encouraging, if necessary forcing, the polluting industries to clean up now, and making them start pricing their products to include the cost of treating or reclaiming their chemical efflents. This principle must apply to atmospheric emissions as well as to the stuff being dumped in the rivers.

3. We must change our national transportation policy to shift the emphasis and the major expenditures from new highways to efficient and rapid mass transit. If Congress finds it politically impossible to divert gasoline-tax revenues to the refurbishing of old railroads and subways, and to building new ones, then the gasoline tax should be reduced to an amount sufficient essentially to maintain our present highway system in good order. Thus relieved of some of the burden of gasoline taxes, Americans can afford to pay other taxes to improve mass transit.

We cannot go on pouring all those billions annually into new concrete and asphalt that destroy nature and blight the environment while inviting more and more automobiles into our congested cities. In short, gentlemen, as a Nation, we've got to throw off our enslavement to the automobile. Do you want a more difficult and more revolutionary objective?

4. The problem of solid wastes calls also for drastic innovations. There was a time, not too many decades ago, when old newspapers and old rags and scrap metal could be sold or collected for a price and reprocessed at a profit for the market. Not any more. Our technology has concentrated solely on production from new raw materials, and it is no longer competitive for anyone to engage in recovery and reprocessing industries. This can be changed and must be changed by direct Government subsidy to the reprocessing industry.

One of our most profligate wastes of natural resources is the one-way transport of plant nutrients from the farmlands of America, via city sewerage systems, into the rivers and the sea. The public must begin to subsidize the recovery of those nitrates and phosphates and other vital minerals from the sewage and their return to the land as fertilizers. Some of the millions now beng spent in other forms of farm aid could be diverted to those purposes.

The packaging industry must be regulated, and particularly noisome products such as the throwaway bottle should be banned outright.

All these innovations that may sound drastic aren't really drastic at all, and won't seem so to the public, when we realize the alternative is to drown in a sea of trash and garbage.

5. We must stop temporizing with the persistent chemical pesticides and other chemical wastes that are polluting the environment and ultimately, in one way or another, must poison man himself. The manufacture and distribution of DDT should be halted now. Lead must be removed from gasoline. The use of mercury in seed dressings should be prohibited. The ecological crisis requires prompt and tough action to control all such environmental poisons.

Mr. **Reuss.** Thank you, Mr. Callison.

Mr. McCloskey spoke of the need for a constitutional amendment setting up an environmental bill of rights. I take it such an environmental bill of rights would set forth everyone's right to clean air, clean water, and so on?

Mr. **Michael McCloskey.** Yes; various drafts are in circulation; a number have been introduced in Congress. I think there are different approaches represented in the drafts.

I am not sure that we have really arrived at any consensus yet about the approach. One approach seems to be to say the public is guaranteed the right to use these resources in a proper condition.

Another approach, which is a more traditional one for a bill of rights, is to try to project the rights which individuals have, such as to be free of assault by noxious substances, and pointing toward the rights individuals need for a healthful habitat.

I think more work needs to be done to try to refine these concepts. I do think that any one of them could be a vehicle for serving a number of valuable purposes. As we have analyzed it, one is a statement of general goals, really a policy statement at the highest level. Another would be to try to actually create some causes of action, some protectable rights. And there are problems of defining them.

Another is to confer a clear basis of standing. And another, which is particularly involved in some of the State amendments which are being talked about, is to actually protect a given dedicated area from invasion, such as the Adirondack Forest Preserve in New York State.

Mr. Reuss. I am aware that various bills for such a constitutional amendment have been introduced over the past 2 or 3 years. My difficulty with them, very frankly, is that from what I have seen so far it would seem to me energy spent in the legislative halls, actually getting specific laws on the books, might better be spent in passing a loose, generalized, constitutional amendment saying in effect that everybody has a right to clean air, clean water, and habitable land.

Everybody pays lip service to those goals now, as it is, in the Congress, the President, and so forth; and I put it to you that Congress could spend its time more profitably, if, for example, it addressed itself to a specific law governing what constitutes standing for a private person or a private conservation group to sue in the Federal courts in an environmental matter.

I gather you aren't able today to point to any particular text of a constitutional amendment which you feel would actually do this.

Mr. Michael McCloskey. Yes, that is true. I don't think we are really satisfied yet that any of the drafts we have seen go far enough to really be of substantial weight, though we are at work trying to evolve some.

I am particularly concerned about making sure that there is a basis for some protectable rights, and that we are not just enacting rhetoric that expresses a broad policy.

Mr. Reuss. Let me ask you this question: Suppose in this year you had your choice of one of two things—you couldn't have both, you could just have one. The first thing would be full funding of $1¼ billion for the Federal Water Pollution Control Act's waste treatment construction grants, instead of the $800 million requested by the administration.

The other possibility would be a constitutional amendment entitling everyone to clean water but only $800 million would be spent on it. Which would you prefer?

Mr. Michael McCloskey. I think there is no doubt about my choice of the money. I think until we perfect these drafts for amendments to the point that they really do have substance to them, I would quite agree that there is a world of other practical and fruitful work to be done.

But I think that there is a germ of an idea here which I don't think will die. And I think it expresses a very valid concern which rises out of the fact that up to now we have a society today where people's grievances are growing out of these environmental assaults; and yet they don't have legal recourse in enough instances to gain any redress.

And I think the kind of grievances which people have now are just as important as the kinds of grievances which originally gave rise to the Bill of Rights. And the courts ought to be able to help people with them.

We are just beginning to get a toehold in the courts with them, and there certainly needs to be a whole body of law evolved. And there is a feeling that there is a certain nucleus of rights which should be invulnerable, and yet the Constitution, at least as now interpreted, doesn't provide such an invulnerable right.

Mr. Pankowski. Could I address myself to this a moment?

Along with my friends from the Sierra Club, I would take the money too, Mr. Chairman. I think the value of a constitutional environmental bill of rights would not be as meaningful at the Federal level as it would be at the State level, where State legislatures have not been responsive to many of our concerns.

We can't even get some of the States to consider what they ought to be doing about wetlands, for instance, and to consider changes in antiquated statutes to the effect that waste treatment is a beneficial use of our waters. I think a constitutional amendment, as it would permit us to go into court and to require that the States meet their responsibilities in this regard—in the broad area of environment—would be more helpful there than, let's say, at the Federal level, where we have a good deal of substantive law on the subject.

In that conjunction, many of us have worked on a constitutional amendment for the Virginia State Legislature, which would require that to the end that people shall have clean air and water, the State legislature is required to do certain things. They cannot simply acquiesce to the changes taking place around them.

Mr. Reuss. Mr. Callison, you make a number of challenging points that I would like to discuss with you a little bit. You pointed out that our current American goal, which I take it is the goal of maximum production set forth in the Full Employment Act of 1946, is to have more products rolling off the assembly lines in each industry this year than last year.

I think this is a perfectly fair statement—things stated as they are. How would you go about dealing with that?

With particular reference to the problem of the poor in this country, I think you would agree, as far as they are concerned, they need more products rolling off the assembly lines—what do we do about jobs for people if we produce fewer products?

And, thirdly, with particular reference to how the Government gets the revenues to fight air and water pollution and do everything else it has to do.

Traditionally, we have gotten those revenues because a given set of tax brackets attach to an ever-larger gross national product every year, and this has resulted in higher revenues.

Mr. Callison. Mr. Chairman, it is a very difficult problem to attack and a difficult goal to attain—this business of adjusting to a nongrowth level of economic activity. There are various ways I think that it could be done.

The legislative and taxing controls would have to be worked out to do this with great study and great detail. But there is a greater level of profit or surplus being produced in many of our economic activities than is necessary.

More of this could be taxed to provide the funds. More employment could be adjusted or diverted into service activities, into programs that tend to abet and add to the quality of living instead of the quantity of consumer goods that are produced.

It seems to me that there are enormous opportunities for more people to be involved with, or occupied by, cultural pursuits and educational pursuits.

This would tend to raise the quality of life and this could be done without building toward a place where each home has two or three television sets instead of only one, where each family would operate two or three automobiles instead of the one that is really needed.

It would be difficult. Detroit, for example, would have to adjust to a tradition not of growth but of stable production of automobiles. I don't think we are going to eliminate automobiles, nor should we, but we can't go on adding hundreds of thousands or millions of automobiles to the highways each year. We simply cannot.

The surplus of land, space for streets and parking places, is running out. Unless you want to turn South Dakota into New Jersey. By the time we did that, we would certainly have an oxygen deficit atmosphere.

Mr. Reuss. Would you rely primarily on economic forces to bring about this lessened dependence on the automobile—for example, by cutting down on highway and expressway construction you would make a trip to town by automobile more expensive, and you would also make it a lot less satisfactory and more time-consuming.

Mr. Callison. That is one way to do it. I think we have to begin to resist the automobile—I say this to my colleagues in conservation.

I attended a little meeting in my home village last night which was addressed—Mr. McCloskey will be pleased to know—by David Sive, who is one of the distinguished counsel assisting the Sierra Club and some of the rest of us in environmental problems.

And this subject of the automobile and transportation policy came up for discussion. We have got to resist the construction of more expressways and throughways. Let traffic get more crowded.

When it become uncomfortable enough, people will quit driving their automobiles so much. Put some more taxes on automobiles. One of Mayor John Lindsay's advisers, made a constructive proposal recently, and that all of the tolls for the bridges and tunnel approaches to New York be doubled and parking lot fees be increased.

But you see, anything like that would have to be accompanied by what has not been forthcoming yet, and that is an increased investment in rapid transit.

Mr. Reuss. You also say somewhere that big cities should not be allowed to grow much larger. One way, of course, of getting at that is to establish new towns away from existing cities. That would take care of some of the population growth. But there are those, you know, including I think some of the city planners, who say there is nothing that can be done about the growth of cities—that you can't stop people from attaching themselves to the outskirts and that is that. What do you have to say to that?

Mr. Callison. Well, I say that it has to be done. I don't accept the negative, the throwing up of our hands in despair at the growth of human population. This is the basic problem. We have to slow down that growth and bring it to a point where we maintain a stable population level.

It has to be done worldwide. But because it is not being done worldwide, there is no reason why we in America, in what is supposed to be the most enlightened country in the world, cannot begin it in a very vigorous way.

And these are not easy undertakings. It is not going to be easy for us to survive on this planet at the rate we are going, but we have to face up to it.

Mr. Reuss. Apart from the problem of overall population size, we have the question of what to do—whatever size the population is—to try to keep big cities from getting bigger? I suppose one way to do that is to set up green belts or open spaces around them.

Mr. Callison. And holding fast to those areas that are not being developed, not caving in. It can be done. I live in a New York City suburb in Westchester County—Hastings-on-Hudson. I happen to be serving currently as a member of the village board of trustees. So I am at the moment involved with or concerned about a planning program—the updating of the village's master plan. We will be facing the problem of our zoning regulations, what we will do with them.

It is my feeling that instead of accepting the population projections which have been advanced by the demographers for the New York metropolitan area as something that is inevitable—that by 1980 we are going to have so many million more people living in Westchester County and in 1985 so many million more—we have to refuse to accept it.

The orthodox planners who accept these population projections as gospel say, "well, you have to plan for this many more people in your village." I reject that concept. I say that we must plan and zone and regulate to hold a given area at what, in our best judgment, will be the optimum population.

If we start getting tough on these things, then we are going to help establish a policy of stabilizing human population. We just have to do it.

Mr. Reuss. Do you think there can be a national living area policy which would attempt to govern the size of cities?

For example, you spoke of New York and the need for not accepting the projections of the demographers. If New York is the only area that does that, then the population so excluded is going to have to go somewhere else.

Mr. Callison. It is going to have to be a national policy; I think that is right. I think Mr. McCloskey spoke of the need for this—the need for planning. We need nationally directed planning.

Of course we are happy we are talking to the Congress of the United States and that I am not merely now speaking as a member of the village board of trustees, because these problems are far beyond the capability of local government—although I think we all can strike our own blows for liberty in our local areas. I think in shaping a housing policy or a development policy for communities, such as the one in which I live, we have to avoid discrimination against low-income people. The suburbs of New York are being accused of this, and to some degree justly. I think probably this has come about because of two factors.

One of them is that many of the people are determined to save their environment and not let it become too congested. Too much human congestion destroys the environment for people. It destroys the quality of living. Then, of course, I am sure there is also the factor of wanting to keep out what some people say in the suburbs are "the undesirables from the Bronx and from Harlem." But this we have to avoid. The people in the Bronx and Harlem have as much right to a decent environment and decent living as anybody.

However, you are not going to give them a decent environment if, in any area, you merely maintain or increase the situation of sheer human congestion as in the core cities where people live too close to each other.

Mr. **Reuss.** I note that you also mention in your paper the problem of phosphates as a contributor to water degradation.

Our subcommittee held hearings last December on the phosphate content of detergents—how, when detergents get into the wastewaters, they are thought to be a leading cause of eutrophication of our lakes and streams.

I was very pleased to notice in one of our papers that the Federal Water Pollution Control Administration—which a couple of months ago wasn't even sure that phosphates in detergents had much to do with eutrophication—has now apparently taken a much harder line and says that phosphates in detergents should be immediately reduced in content and eliminated as soon as possible.

Do you gentlemen have any observations or comments on the question of phosphates in detergents?

Mr. **Pankowski.** As a general rule of thumb, I think it would be safe to say we wouldn't be hurting our rivers one bit if, for the next 10 years, we had a good slug of distilled water, and that is precisely what in many rivers is needed. So, if there is a feasible way to eliminate phosphates, that certainly ought to be done.

I would much rather err on the side of some rather pure water, which doesn't have much life in it at this point, than in the other direction. I think the condition of our rivers and streams, particularly the large areas, needs that kind of overbalance in favor of a cleaner effluent.

Mr. **Reuss.** Congressman McCloskey?

Mr. **Paul McCloskey.** Mr. McCloskey, I was interested in your suggestion of a national land-use policy. I am impressed by the fact that some grave questions have been raised concerning whether the Hawaiian land-use policy can be continued.

Do you know of any State, other than Hawaii, which has attempted to impose a State land-use policy, labeling some areas urban, some conservation, and some agricultural?

Mr. **Michael McCloskey.** No. That is the only instance I know of where a State has actually engaged in the effort. But as you know, there has been a somewhat fitful planning effort in California, preparation of a State development plan that did have an open space study done in connection with it.

We have hoped that action on that open space plan might surface in some fashion. Yet the problem seems staggering.

But as you know, at the present time there is a proposal that is being subjected to hearings throughout that State to set up regional open space commissions which will cause all of the counties within those regional districts to prepare open space plans that will be mandatory.

Mr. **Paul McCloskey.** Well, looking at the situation in a State like California—where a local government depends on the property tax base for the great bulk of its financing, and where the population pressure is so immense and probably exceeds that of any other State with even remotely comparable open space resources—it appears that California counties and cities will be unable to withstand the pressure for a new property tax base.

In California, we have already lost the San Fernando and Santa Clara Valleys, and we are in the process of trying to preserve the Napa and perhaps the Livermore Valleys. But in the long run there is no source of revenue or source of law available to local and State governments to preserve this open space.

For that reason, the enactment of a national land use policy which would provide Federal revenues and perhaps Federal zoning of conservation, recreational and agricultural areas has been suggested, and that seems to be the only answer.

I wonder if your organization, or those of the other witnesses at the table, have considered which Federal agency should administer or consider a national land use policy?

Does anyone care to comment on that?

Mr. Pankowski. I haven't had a chance to read the legislation that was introduced in the Senate on this particular point. It would seem to me that we cannot really talk about Federal zoning, Congressman, because of the traditional prohibitions in the Federal Constitution.

Mr. Paul McCloskey. I have examined that question. I find no constitutional provision that would deny to the Federal Government the power to condemn land if it was to serve a Federal purpose—such as the preservation of open space—if we announced that as a national policy.

Mr. Pankowski. Zoning is a function of the police power, not of the power of eminent domain. If we are talking about the power of eminent domain and acquisition of interest—either in fee or easements, or limited interest—then getting back to your question as to who is going to do this thing, I think, just off the cuff, we are not now buying the areas which Congress has already said that we must buy, such as our national parks, national lake shores, national seashores, national refuges. Our land acquisition program is 5 and perhaps 10 years behind in terms of what public needs are.

If we are going to expand this program to include, let's say, lesser interests in holdings which would be left open in a State and not develop, either for recreational use, for instance, or not for developmental uses, then we are going to have to have a dramatic increase in the kinds of funds that are going into the Land and Water Conservation Fund.

Mr. Paul McCloskey. Let me pose an alternative to you in this connection. While there are no present sources of Federal revenue that might be available to acquire and preserve open space to the degree we are considering, and while it is certainly true there is no source of local or State funds for that purpose, let us explore the possibility, in considering the dispersion of population that the President spoke of in his state of the Union message, of the creation of new cities that we have talked about. The National Committee on Urban Growth Policy last spring recommended creation of 100 new cities.[1] If we are going to have the tremendous population increase and if we are going to settle new cities, the Federal Government may have to determine where those cities go. If it has that power, it would also have the power to cause the land selected for this new urban use to multiply many, many times in values; and that increment in value caused by the creation of an urban area might be used to acquire open space areas.

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[1] The recommendation appears in "The New City" (Frederick A. Praeger, Inc., New York City, 1969).

In other words, let's assume the following situation: That we set up in Iowa somewhere a city of one million people. And in labelling that area "urban," we cause that land value to be increased by say $5,000 an acre. We take that increment in value to acquire open space not only in and around that particular city, so we can create the garden city that we contemplate, but also to acquire particularly threatened areas of open space. I am not speaking of legal jurisdiction as envisioned by the Constitution, but actual imposition of open space easements, imposed by the Federal Government.

Mr. **Pankowski.** What you are suggesting is that the Federal Government actually serve as a land agent in receiving the benefit of the difference between what it buys the land for and the incremental value of the land as it is developed.

I think that is a rather exciting concept. I think it is the kind of concept that should be explored as we develop federally assisted projects, such as airport development, where a certain percentage of the proceeds from such development could be plowed into conservation districts around that facility or wherever else they might be required.

Mr. **Paul McCloskey.** My understanding is that in every Federal project, whether it is mass transit, highway, or airport financing, the viduals, or with the county, or with some local smaller, more efficient, to the improvement to increase tremendously.

If, at the same time we are using Federal funds to condemn land and acquire it for these improvement purposes, a windfall is created for those fortunate enough to own land in proximity to any Federal project—the English adhere to the concept that 40 percent of the increment value be turned around and applied to the Government agency which causes the increase—if we were to proceed with a national land use policy and a national land use commission which would administer that policy, do any of you gentlemen have any suggestions as to how we should set it up in the Federal Government?

Should it be HUD, which is responsible for new cities, the Department of Interior, which administers much of our lands, the Department of Agriculture, which administers others?

How would you coordinate governmental reorganization to achieve the national land use policy under existing law?

Mr. **Michael McCloskey.** I am not sure I would be very comfortable seeing that authority vested in any existing agency. One conceivable way to reorganize, if you want to think ahead somewhat speculatively on how to reorganize existing agencies in this field, would be to have one department dealing with the more pervasive ambient types of environmental problems, such as I suggest in my testimony, and another dealing with land resources and land planning that might administer the various types of public lands, and then another unit of it might deal with supervising planning for non-Federal lands that are involved with Federal programs.

Perhaps this is not something that could be done quickly, though a bill introduced by Senator Jackson is pending on this matter now in the Senate, and it at least picks up part of this idea.

So I suppose we do face the question more immediately of where to put it.

I am really not sure that I like the idea either of HUD or Interior, though those would be the more likely spots for it.

With water pollution as with other things, often we try switching agencies around among departments before finally a tolerable solution is achieved.

Mr. Callison. I would agree that your concept is an exciting one. I don't know which department it should be in. If I had to choose between departments without the option of reorganizing—perhaps creating a new agency to do this, which is my suggestion—I probably would say the Department of the Interior. But I wouldn't want to express a strong opinion without giving it a good deal of study.

Mr. Paul McCloskey. I ventured this speculation today because I though it would be worthwhile commencing consideration of this concept. After a lot of study of the problem, I see no way to preserve open space in this Nation without a servere change, really an abrupt change, in 190 years of law that has evolved to promote development of land. The law has traditionally placed the tax base of the local governments on the property tax, and it yet has given to the Federal Government the primary source of income—the income tax. To get those income tax funds into the problem of open space seems almost impossible without a national land use policy, a national land use commission, and a revolving fund that the commission could administer, where it would take the incremental values of the property and apply them for the acquisition of open spaces.

If we can't handle adjustments under existing laws, I think there has to be an immense change, really an abrupt change, in the whole Federal-State-local relationship and tax structure.

I suggest and hope that perhaps your organizations might comment on this.

Mr. Pankowski. If I could just add something, Mr. McCloskey. Your discussion of this concept really points out the fact that we have a miserable division of labor in this country with respect to doing the jobs that have to be done for the environment. We have overlapping and cross-jurisdictions, we have State agencies doing perhaps what the Federal agencies ought to be doing and can do better; and on the other hand we have shifted burdens on the counties which are not able to handle burdens which the States could do better.

I think in some instances perhaps we have shifted to the Federal Government responsibilities that really belong with the private individuals, or with the county, or with some local, smaller, more efficient, jurisdiction.

I think your suggestion really points that out very sharply.

Mr. Paul McCloskey. Take the AEC for example. It is responsible at the present time for siting public powerplants. Yet there are 50 separate public utility commissions and innumerable local governments that play some part in the siting of these plants.

As much as we would like the Federal concept to be to return the power to local governments, it is clear there can't be a return of the pollution standards to the local governments.

I think in this particular committee, as we head into the decade of the 1970's with this new priority, governmental reorganization to accomplish this new priority in the field of land use is essential.

I know we have a jurisdictional problem as to whether HEW or Interior handles water or air, and the like. But it seems to me that the location of future public improvements and the creation of highway systems, rapid transit systems, and air systems, which tie so clearly into the environmental considerations, just force us into some sort of a national planning agency—a national land use agency—that ties together the location of Federal improvements and installations such as atomic plants and environmental protection considerations.

Without that, we are trying to do a job without the proper tools.

I would welcome, Mr. Chairman, any subsequent statements that these organizations might want to make on this concept after consideration of it.

Mr. Callison. Mr. Chairman, just one observation on Mr. McCloskey's suggestion, and that is that I think it would have to be recognized—I am sure he recognizes—that not all Federal installations or so-called "public improvements" bring about any incremental value to the land. Some of them depress surrounding land values. An example is an atomic energy plant. Another example is a power transmission line. That depresses land values rather than adding to them.

Mr. Paul McCloskey. Under the fifth amendment to the Constitution, when that occurs there is compensation, hopefully, although I don't know how you compensate a man who lives one hundred yards away from a powerline and has to look through it.

But I don't suggest in this principle any change in our constitutional tradition of compensating someone for whatever the Government does that damages the value of his property.

I see this as the only potential source of funds necessary to preserve open spaces to the degree we are talking about. There is certainly no tax revenue available to preserve say the Livermore Valley or the Napa Valley.

Mr. Michael McCloskey. Could I observe that I think there is a good historical precedent and experience on the approach that you suggest, and that is I understand that during the 1930's and the early 1940's in connection with Federal water projects and dams there was the practice of excess taking. They would take a considerable distance back from the high watermark, beyond a point that would ever be innundated and hold this land and later resell it. The assumption was, which may not always be the case, that the value of that land would rise and that increment was captured. But I understand that policy was abandoned sometime in the late 1940's or 1950's. But we had a considerable body of experience with doing that. I understand the idea was put forward but not adopted in connection with the freeway system too. In retrospect, I would certainly wish we had done it.

Mr. Paul McCloskey. I have no further questions. Thank you, Mr. Chairman.

Mr. Reuss. Mr. Indritz?

Mr. Indritz. Mr. McCloskey, in your statement you urge that there be a strong central agency to take preventive action to protect the environment. Your concept apparently applies to both the Federal and State levels, because you recommended that there also be special State regulatory commissions established.

I would like to ask you whether perhaps you are failing to appreciate the value of a pluralistic approach. Some of our environmental victories have been where two competing agencies with different approaches have been able to present different views to the public. For example in the Hunting Creek dispute, the Corps of Engineers, which had monolithic control, took one action; but after this committee's investigations revealed that another Government agency opposed that action the Corps took a new direction.

Also, in connection with the proposed jetport in Florida, the Federal Aviation Administration and the Dade County Port Authority were primarily interested in construction of the giant airport, but when that interest was challenged by another agency, the Interior Department, and by conservation groups, seeking to preserve the ecology of the Everglades, there was a change of direction.

Even in your own dispute with the San Francisco Bay Conservation and Development Commission, where the Sierra Club is opposing BCDC's action approving the South Bay crossing, your club has turned to another agency, the Coast Guard, in an effort to block that project.

What I am trying to suggest is that perhaps a pluralistic approach such as is set forth in the National Environmental Policy Act, which the President signed this January 1, will be more effective to preserve the environment. That act provides that every agency which takes an action that significantly affects the quality of the environment must obtain the views of all other agencies having expertise or jurisdiction, and must set forth those views in a detailed statement. That statement must be made public so the conflicting views will be apparent.

Would you comment on whether the ultimate protection of the environment can better be achieved through a pluralistic approach, rather than through a monolithic, central, strong agency, which, may I suggest, sometimes is dominated, as some regulatory agencies have been dominated, by the people of the industries that they regulate.

Mr. MICHAEL MCCLOSKEY. I think that you raise an area of fundamental concern, and I don't disagree at all with what you say. I really didn't mean to suggest establishing agencies so monolithic that we destroy pluralism.

Specifically what I had in mind—if we take the State level first—is that rather than having almost no State agencies engaging in overall State planning, we have some such agencies, still leaving all of the lower jurisdictions there, maybe with slightly reduced powers. But we put in some new statewide agencies established for planning, and we also establish additional special purpose commissions in districts for areas such as the coastline and San Francisco Bay. For example, BCDC does not replace another agency; it does, however, assume some powers that were fragmented.

So I would say this would not be destroying pluralism, but it would be trying to correct some of the excesses of a situation which is so pluralistic that problems are not being solved.

Now at the Federal level, I was suggesting that you might think about collecting together many of the agencies with protective responsibilities so that they can respond to the kind of early warning data that will come from the new Environmenal Quality Council.

Perhaps another grouping might involve collecting some of the land management agencies, and perhaps another grouping might be some of the construction agencies. I am not suggesting that this is the only way to do it, but I think there is value in having the protective agencies gain strength by being together and not being sort of fragmented off under the cover of agencies with many other responsibilities.

I think this is a weakness now. That as a result, these agencies don't come together in a fashion which leads to a strong presence and a strong force for the environment.

Mr. Reuss. Do you have any other comments on that point?

Mr. Callison. If I may, I shouldn't presume to read Mr. McCloskey's mind, but I think perhaps what he is thinking about, at least what would be in my mind on this question of Mr. Indritz, is a Council on Environmental Quality such as has now been established in the Executive Office of the President, with a little more power than this one has.

Some of the drafts of the legislation that were considered by Congress proposed to give the council power to stop Federal projects for a given period of time, 6 months or so, while the environmental questions could be explored. Such an agency at the State level would be very valuable.

Mr. Reuss. Thank you very much, Mr. McCloskey, Mr. Callison, and Mr. Pankowski, for your great contributions to our hearings.

The subcommittee will now stand adjourned until tomorrow morning in this place.

(Thereupon, at 11:25 a.m. the hearing was recessed, to reconvene at 10 a.m. the following day.)

THE ENVIRONMENTAL DECADE

(Action Proposals for the 1970's)

FRIDAY, FEBRUARY 6, 1970

House of Representatives,
Conservation and Natural Resources Subcommittee
of the Committee on Government Operations,
Washington, D.C.

The subcommittee met at 10 a.m., in room 2154, Rayburn House Office Building, Hon. Henry S. Reuss (chairman of the subcommittee) presiding.

Present: Representatives Henry S. Reuss, Guy Vander Jagt, and Gilbert Gude.

Staff members present: Phineas Indritz, chief counsel; Josephine Scheiber, research analyst; and J. P. Carlson, minority counsel, Committee on Government Operations.

Mr. Reuss. Good morning. The Subcommittee on Conservation will be in order for the fifth day of its hearings on action proposals for the environmental decade of the 1970's.

We are very happy to have with us this morning a distinguished panel, consisting of David Brower, president of Friends of the Earth; Dr. Allen V. Kneese, director, Quality of the Environment Program, Resources for the Future; Dr. Beatrice E. Willard, vice president of the Thorne Ecological Foundation; Stewart Brandborg, executive director of the Wilderness Society; and joining us shortly, Daniel A. Poole, president of the Wildlife Management Institute.

Under the rules, your prepared statements will be admitted in full into the record.

Would you proceed, Mr. Brower, to give us your statement, either reading what you have or summarizing it as you wish.

STATEMENT OF DAVID BROWER, PRESIDENT, FRIENDS OF THE EARTH

Mr. Brower. Thank you, Mr. Chairman. Thank you for the privilege of being here to address this committee.

I will read my statement, which is rather brief.

I am David Brower, and I am president of Friends of the Earth, a membership organization incorporated last July, committed to preservation, restoration, and rational use of the ecosphere. Our headquarters are at 30 East 42d Street in New York City, my own office is at 451 Pacific in San Francisco, and our Washington office is temporarily at 323 Maryland Avenue, NE.

By forgoing tax exemption and deductibility, Friends of the Earth is seeking to be maximally effective in influencing legislation and in mobilizing election support for political candidates with outstanding conservation records. We are also beginning a publishing program. The first books are the "SST and Sonic Boom Handbook" and "The Environmental Handbook," of which I am submitting copies for the subcommittee's use. Instead of going into further detail on what Friends of the Earth is doing, I will simply submit a brochure that tells more, and a separate article about FOE's role in the 1970 elections, with the hope that these can be included in the hearing record.

In various ways, Friends of the Earth is trying to carry out the vision Adlai Stevenson gave us in his last speech:

> We travel together, passengers on a little space ship, dependent on its vulnerable reserves of air and soil; all committed for our security to its security and peace; preserved from annihilation only by the care, and the work and, I will say, the love we give our fragile craft.

And I would like to talk about the need for that love, and the chance that we can still exert enough of it in time.

I think the principal question of the decade is: How dense can people be? For openers, I would like to see the world aim at a population of one-half what it is now. That sounds a little extreme, perhaps, but that is what the population was when I graduated from high school. California was only a quarter of what it is now. It was not that bad. We had enough people for a culture. We had transportation. We had far better air and water than we have now. It may be a good goal.

I think the population problem is the most severe problem we have to contend with. During the last few weeks I have come across one statistic that, if right, is alarming: At the rate things are going in India right now with regard to the population increase, in 9 years it will take the entire food production of the United States to feed India.

I like what Robert McNamara said when he addressed Notre Dame. He said that there are not going to be 7 billion people on the earth by the year 2000; other methods will have stepped in to interrupt that. We could either control population in a rational way, or the four horsemen would ride again.

I think we can control it rationally, and I think it needs to begin in affluent white America. This is where the population problem is greatest of all. The arithmetic is simple. You have heard statistics like it, but 6 percent of the population—the United States—is using 60 percent of the world's resources, and in the United States itself, 1 percent of the population is using 60 percent of the U.S. resources. I think that most of that 1 percent is in the white, affluent America. One baby born to an affluent white American is using something like 100 or 200 times the world's norm in resources. It would be all right if you could go on looking for more and more resources, but there are limits. This is one of the problems.

I do not know what we are going to run out of first. I think it may be judgment. This certainly seemed to happen in the time of Hitler, when the genocide was going on and the millions were being gassed. Some writers said that when people had got nearer and nearer the edge, where there was no more hope, they began to hallucinate more and more rapidly, thinking it would never happen. If you concentrate on that enough, you would almost conclude, as I heard someone almost conclude at the conference in Aspen last September, that survival is not politically feasible.

One of our chief obstacles is the doubling habit, which is a rather new one even by man's time scale. Population, of course, shows this quite well. For 50,000 years man was doubling about every 10,000. Now he has got that figure down to 30 and thinks he can keep it up—at least some people do. But doubling needs an analogy to make it a little more vivid: If you will imagine that you are on a highway, doubling your speed every 10 seconds, you may get the idea of what I mean. One second, 2 seconds, who cares? Two miles an hour, 2 miles an hour to 4, who cares? Four to 8, 8 to 16, no trouble yet except that 16 is the highest speed you can sustain with your own energy. Then 16 to 32, just about a horse's maximum. Then we go up to 64, which is the highest speed that can be maintained on the ground by any mammal's own energy as far as I know. Disregard the bumblebee.

Then double it again so that you are doing 128 miles an hour. I think that is about the rate now, with all our doublings running through our last resources, and they are running out of some. But we are running through them at 128, and when you are on the highway at 128 miles an hour you should have your hands—both hands—firmly on the wheel. You should be looking ahead quite intently. You should be feeling a little tense, and you should be hearing sirens.

I think we are; we are hearing them all over. I think that is one of the reasons this subcommittee is here. That is why magazine after magazine is coming out with environmental issues, and I think notable among those is the current issue of Fortune. That is why you get television specials. The sirens are being heard. Yet if you keep reading the financial pages, you see the assumption that we can still go on for another doubling. The last one was so good. We are still on the road, aren't we? Everything is peachy; double again to 256 miles an hour—and then you are off, as the race will be. You are off the road, and man is out of the race.

So I am really here in defense of man. Nature will be around. Nature can respace and reorganize, and it will do it again, long after we are gone. But I would like to see man stick around for awhile, and that is why I am here to plead, I suppose, for the rational approach. It is time to turn around. And there is not much time to turn around. I give us 10 years to really turn around and make some absolutely new assumptions. We have operated in this country for a long time on what I would like to call a "buffalo-tongue" economy. If you will recall the plains days, the people would shoot the buffaloes, take the tongue, and leave the carcass there. They might not even bother to take the tongue; there were so many—why not get rid of them?

We have now advanced to the "cowboy" economy, and that is Kenneth Boulding's term. We still think there are no limits to our resources. We can still go on doubling. There is lots of space, there is lots of everything. Come on, let's double again. And that is the cowboy attitude in a fixed, closed ecosphere, spaceship earth, which will not stand that kind of economy. We must know by now that you cannot continue to grow and grow in a finite sphere. Something else has to happen. However, there is probably no one in this room who would feel relaxed if the economy stopped expanding after we have been told for so many years that it had to expand, if businesses could not expect to see next year's profit bigger than last year's. They would be frightened. And yet I think we can realize, if we apply just one bit of logic, that if businesses keep expanding, it is going to cause their death. You can't really sell anything on a dead planet. It is only balance, only a search for equilibrium that will allow us to stay around, and that search needs to be implemented, I think, right away.

Panelists in the John Muir Institute's symposium last September in Aspen outlined the five basic requirements for moving toward equilibrium, and we need to work on all of them: (1) halt population growth, (2) create an ecological ethic that will influence all human affairs, (3) create an economic system not based on growth and not abusive of the earth, (4) organize voters to demand effective governmental action, and (5) form new international institutions to deal with the ecological crisis.

All of these are attainable. What your subcommittee is doing can help to get them started and let them take form in specific legislative strategies. As Congress finds its role in the movement toward equilibrium, so will businesses be finding theirs, and civic groups theirs, not at odds with each other, but in concert. This is what we have to work with in the Environmental Decade.

I will close with two more hopes: An Italian novelist of the 1930's said, "The only true dignity of man is his ability to continue to fight against insurmountable odds." That may sound a little lofty, so I will give you Pogo, who said, "We are confronted with insurmountable opportunities."

Thank you, Mr. Chairman.

(The article entitled "Muir and Friends," to which Mr. Brower referred, is in the subcommittee files. "Election Role Planned for 1970" follows:)

Election Role Planned for 1970

Because of its specialized functions, the League of Conservation Voters will be prominent only in election years, but it will have a year-round function. As a department of Friends of the Earth, based in FOE's Washington office (323 Maryland Avenue NE), the league will direct activities in support of political candidates committed to defense of the environment. League coordinator Marion Edey explains how the league will operate:

"Conservation values have been neglected partly because support for conservation is diffuse and is not concentrated in any particular region. We seek to overcome this problem by forming a national movement that will concentrate its efforts on certain local elections.

"Because Friends of the Earth is not tax-deductible, it is free to undertake substantial legislative and political activities in a way that most other conservation organizations cannot. Our subsidiary League of Conservation Voters will openly support political candidates and solicit funds for their campaigns.

"In each election we will pick a few outstanding legislators with superior conservation records who face very close election contests. We will advertise for them in newspapers and magazines and by direct mail. All contributors will be urged to write their own personal checks to the candidate, but to send them to the League, not to the candidate directly. Thus we can combine them for him and let him know that he received these contributions because of his fight to protect the environment from abuse. (When individuals support or oppose a candidate he may not know the reason why; conservation sentiment may be greatly underestimated for this reason.)

"Our goal is to convince legislators that issues such as conservation and overpopulation can be decisive in an election. This will greatly enhance the influence of all conservation groups.

"The League of Conservation Voters is completely nonpartisan, and is glad to support a candidate from either political party if he is a true friend of the earth."

At present, the league is looking over the candidates for the 1970 congressional elections and seeking funds to underwrite the main appeal for campaign dollars.

FOE, the parent organization, is preparing recommendations for environmental platforms for all the political races it hopes to influence.

Mr. Reuss. Thank you, Mr. Brower. Dr. Kneese?

STATEMENT OF DR. ALLEN V. KNEESE, DIRECTOR, QUALITY OF THE ENVIRONMENT PROGRAM, RESOURCES FOR THE FUTURE

Dr. Kneese. Thank you very much, Mr. Reuss.

I am honored to have the opportunity to appear before the subcommittee. I am an economist. I work, as was already said, for Resources for the Future, Inc.

I would like to summarize the main points in my testimony just briefly, and I will concentrate primarily on the questions of environmental pollution and especially on the water pollution question.

As background for that, I would like to point out that while in many ways we are very lacking in our understanding of man's interrelationships with the natural world, with the physical and biological world, I think that the discussions of environment that have been presented in the press and publicly in various forms have even been more lacking in the understanding of what it is in the economic and social systems that may be causing us to have some of the difficulties that we now have.

I think assertions that there is a failure of morality, searching for villains, wondering why it is we have Government subsidies and the problem gets worse, are all manifestations of this lack of understanding of what some of the central problems are.

I am going to try to describe one of the central problems from the point of view of the functioning of the economic system.

It must be pointed out that over a great many years the economic system of the western countries, including ours, was designed by people who structured it in various ways, through laws, who built into it a system of incentives and motivations that make the engine run, so to speak. And the central aspects of that design in our case have been the concept of private property; the concept of individual freedom; the concept that, if one keeps the channels of commerce open in order to prevent monopolization, that private interests, private property, private exchange will lead to a rapid growth in production, that it will tend to put prices on resources and on services which are commensurate with their social worth in various alternative purposes.

This engine, I think, has been a very successful one in many respects. It has led to the very rapid exploitation of resources, it has led to a very rapid increase in standards of living, and I think these achievements should not in any way be minimized. They are extremely important in the history of humankind, in my opinion.

It might be pointed out, too, the rapid rate of expansion we have witnessed has permitted us to deal in some ways better with certain social problems than we might have been able to do otherwise.

It has not forced us to confront quite so explicitly the question of optimal distribution of income, for example, as we would have had to do if the pie had not been increasing so fast and almost everyone had not been gaining.

On the other hand, we are running into very substantial problems now with this particular economy or social engine, in large measure because particular kinds of resources are becoming rapidly more important than they were in the past. These are resources that economists refer to as the "common property" resources. This engine of private property and exchange was built pretty much on the concept that all resources and all services of value could be privately owned; that they were reducible to private ownership; and they could be exchanged among individuals and businesses.

Now we find that as time has passed this is less and less true of the important resources in our society. The air mantle cannot be reduced to private ownership in any meaningful sense of the word. Water courses are such that the concept of private property can apply to them only in limited fashion.

There are many aspects of physical space, once congestion begins to occur, that are also a common property resource. These are things like landscape and the radio spectrum, for example. As these have become more important, the economic engine which was created for the purpose of allocating and developing resources has been faltering more and more.

The reason is that there is nothing inherent in our market-type exchange system which places any values on these common property resources. They are in such a system treated as though they had zero value even though they may in fact have become very significant and be very valuable for different kinds of purposes.

Consequently, it comes as no surprise whatsoever from the economists' point of view that we are experiencing large-scale pollution of resources. It is not a failure of morality particularly; it is a failure of the system to value things properly and to provide proper incentives for their use.

So it seems to me that if we are going to make anything like a fundamental attack on the problem we must stop trying to treat symptoms in various ways and to see what kind of redesign of the system needs to be made with respect to those sorts of resources.

This means perhaps very vast changes in policies from the way we have approached the problem in the past, which is to try and put patches on things when they were beginning to wear out a bit here and there.

I would like to point particularly to one area and that is the area of water quality or water pollution, where I think we have a substantial body of research that could be helpful to us in designing an approach that would get at the fundamental aspects of the problem.

We have been working on this for several years at Resources for the Future and the sort of approach we have come up with—I will describe it extremely briefly; it is spelled out a bit more in the written testimony—involves two main elements:

One of them is a system of effluent charges. These are actual prices which would be placed on the discharge of waste materials to that particular environment. The idea is that they would reflect social costs of these discharges to the extent that those can be estimated; they would provide an incentive, an immediate universal incentive to industry to reduce the generation of wastes. And we know from various experiences with effluent charges and with sewer surcharges that that is a strong and effective incentive.

It would mean that the prices of goods that are especially consumptive of these common property resources, which are otherwise unpriced, would tend to rise relative to other goods, which use resources like air and water to a lesser extent. So that the value of these resources would become built into the price structure and affect the relative growth of demand for different kinds of outputs.

The other element of this strategy results from very extended and careful case studies of particular pollution situations. It is based on the concept of regional management of the problem. We have studied basins like the Potomac, the Delaware, the Miami of Ohio, we have studied experience overseas, and come to the conclusion which, to me at least, is compelling—that very large savings and very great increases in the effectiveness of water-quality management programs can occur if these problems are attacked on a regional river basin basis.

So the other aspect of this strategy is to provide incentives from the Federal level for the creation of such river basin agencies. We already have some that are effective in limited ways and that could be strengthened very greatly by a program of this kind.

In order not to go over the time limit, I won't comment in detail on the actual strategy which we are using at the present time. I will just characterize it very briefly and just point to one or two of the central faults in it, as I see it.

The strategy we are using is also based on two main elements. One of them is enforcement and regulation of restrictions on individual polluters. The other is the provision of subsidies for treatment plant construction.

The question of regulation is one that I think needs very careful looking at, especially in view of our history of trying to regulate important industrial enterprises in this country.

As has been pointed out most recently in testimony before the Joint Economic Committee, that record is very dismal. And it certainly has been no better in the case of water pollution.

A recent report by the General Accounting Office points out that increases in industrial waste discharges have completely overwhelmed the progress that has been made in the construction of municipal treatment plants in every basin that they studied. It is not a successful kind of enterprise; there are good reasons why it can't be successful in my opinion.

The second is that we have provided subsidies for the construction of treatment plants. There are two or three things wrong with this. One is it makes you think that once a plant has been constructed, the problem is solved; and that is not true, because a great deal depends on how that plant is operated over time, how effective it is.

Many of our treatment plans are not at all effective.

Another aspect of this is that an extension of subsidies to industrial enterprises has a very perverse incentive effect. The reason is it would provide the heaviest subsidies to precisely those activities that use the common property resources most. So instead of having the good effect of building the value of these resources and other uses into the price structure and limiting use through the price system, it would have quite the opposite type of effect.

These points have been made recently by Senator Proxmire in a speech which he gave in introducing a bill which is called the Regional Water Quality Act of 1970.

I think it is an excellent speech, in which he analyzes the GAO report and some of the experiences with charges. If it is appropriate, I would like to enter that speech into the record of these hearings.

Mr. Reuss. Without objection, it will be entered.

(Note.—Senator Proxmire's remarks introducing S. 3181, "The Regional Water Quality Act of 1970," and the text of the bill as introduced, follow Dr. Kneese's prepared statement.)

(Dr. Kneese's prepared statement follows:)

Prepared Statement of Dr. Allen V. Kneese, Director, Quality of the Environment Program, Resources for the Future, Inc.—"Protecting Our Environment and Natural Resources in the 1970's"

INTRODUCTION

Perhaps the most encouraging aspect of the present situation regarding natural resources and environment is the deep and widespread public concern about it. To a large extent, we owe this concern and even alarm to the ecologists. As an economist, I am interested to see that there is now a market developing for forecasts of disaster and some competition growing up among the practitioners of this art to see who can come up with the most ingeniously worked-out vision of the apocalypse.

An interesting example of inconsistent and even countervailing visions is with respect to the weather. We have been told that the discharge of CO_2 and heat to the atmosphere will cause the polar ice caps to melt and drown our cities. Now it turns out that in recent years the earth's temperature has been falling. Aha!—we are told—that is because the discharge of particulates into the atmosphere from human activities is reflecting the sun's rays. No, says another expert, not at all; volcanic action has been strong in recent years and by comparison the discharge of particulates from human activities is minimal.

I present this example not to try to generate confidence that our environmental problems are not so bad after all, but to point out that we know very little for sure about the impact of modern man's activities on the geophysical world, not to mention the biological world. In a way I would feel more comfortable if we knew for certain that we would raise the world's temperature by a degree or two over the next century than to be so aware of the depths of uncertainty in which we operate. The same is clearly true, and could easily be documented, with respect to a host of more limited impacts than the global weather one just discussed.

Clearly then, one highly important task over the seventies is to strengthen and consolidate our geophysical and biological research efforts so that we can better understand these systems and the impacts on them of various events.

But of equal importance and much neglected in the recent, often rather frantic, discussions of the environment is understanding why the social and economic systems produce the results they do and how we can use understanding of them to produce more desirable ones. Call it social engineering if you want. Illustrations of the poverty of understanding in this area are the frequent calls for morality with respect to the environment (morality is clearly needed but the problem is not primarily a matter of failing morals), wondering why the problem doesn't go away when Federal subsidies are provided (Federal subsidies may be needed to help catch up, but they don't do anything positive to change perverse incentive structures), and a search for technological fixes (technology can help as well as hurt but it can't, alas, relieve us of our task to design an economic and political system which produces desirable results).

At the risk of seeming intellectually arrogant, I would like to comment on these kinds of "global" social questions. As I understand it, one of the objectives of these hearings is to gain a broad perspective on what needs to be done in the seventies. I will argue that our present environmental problems, at least in their environmental pollution aspects, are primarily a result of failures in our system of economic incentives. By incentives I mean the system of economic penalties and rewards within which the decisions of businessmen and consumers are made.

Beyond this, we have failed to design political institutions which comport with the character of the environmental management problems we face. I will expand slightly on these matters in the next section and wind up by suggesting a strategy in one of our major problem areas, water pollution, which builds on the concepts developed.

COMMON PROPERTY AND PRIVATE PROPERTY

It has often been said that what we need is a new morality or a new ethic if we are to avoid despoiling the earth. This is really a call for a new set of values which lays more emphasis on the natural, the tranquil, the beautiful, and the very long run. These are values very appealing to me, but holding them says nothing about the social mechanisms through which they might be realized to a higher degree. Even "good" people need rules to live by, especially where the impact of a single person's behavior on the total problem is extremely small. Moreover, it has long been realized that a system which does not rely heavily on the fulfillment of the self-interest of the individual or the family must soon become undemocratic or unworkable.

In 1835, that remarkably acute man de Tocqueville said, "If you do not succeed in connecting the notion of right with that of personal interest, which is the only immutable point in the human heart, what means will you have of governing the world except by fear?"

The writers of the Federalist Papers and framers of the Constitution were very much aware of this point and by and large were successful in wedding de Tocqueville's two notions in their time. The social engine which they created was built largely on the concepts of private property and individual freedom within the framework of laws to keep the channels of commerce open. This reflected the conviction that private ownership, freedom of individual choice, and the profit motive would direct resources to those uses where they are most productive, given individual preferences for various goods and services and the income of the population. This conviction, plus fear of losing personal freedom, have underlain our national assumption that the role of collective action through government should be minimized and have been used to justify our traditional antipathy toward planning.

Of course, the need for a degree of collective action regarding the allocation and use of resources has been realized by almost everyone for a long time. Public works and defense have always had strong appeal. People recognized that a certain minimum amount of collective action was needed to realize gains from cooperation. Accordingly, we have used public funds to build roads and dams, and schools, and generally for those activities where economies of large scale dictated huge investments, or where investments would yield widespread public gains which the private enterprise could not capture.

With a few major exceptions, like the Great Depression, this mechanism has worked very effectively toward the rapid exploitation of our basic resources and a rapidly growing GNP. The levels of human welfare achieved by means of this mechanism should not be forgotten or downgraded.

But now we have come to realize that there is another reason, and one of rapidly increasing importance, why the uncoordinated decisions of the individual, the household, the private firm, and even local units of government cannot be taken to lead to an overall desirable result. We call this additional reason for a faltering "invisible hand" the need to protect the quality of the environment.

A definition of environment or environmental quality which would suit everyone seems to be impossible. But I think that most social scientists have something like the economist's concept of "common property resources" in mind when they speak of the environment. The concept of a common property resource (which should not be confused with a similar legal terminology) encompasses those valuable attributes of the natural world which cannot be, or can be only imperfectly, reduced to individual ownership and, therefore, do not enter into the processes of market exchange and the price system. It should be noted that this concept is inherently a social rather than a natural science one, but that the resources to which it relates are normally attributes of the natural world rather than the direct services of human beings. Notable among such resources are the air mantle, watercourses, complex ecological systems, and at least certain attributes of space. The last includes visual properties of landscape and the radio spectrum, among others.

The one main feature which all these common property (or in our context environmental) resources have in common is that they are subject to congestion. At some low level of use, an additional user of the resource may impose virtually no cost on others. However, a point is reached where an additional user will cause others to have to incur additional costs or suffer disutilities associated with congestion. When this stage is reached, what economists call an externality or spillover effect occurs. In other words, a particular user does not take account of the cost he imposes on others when he decides to use the common property resource. Many instances of this surround us—environmental pollution, mutual interference of radio signals, congestion on public roadways and in public recreation areas, jet plane noise, and scarred landscapes, among many others.

Our usual mechanism for limiting the use of resources and leading them into their highest productivity employments is the prices which are established in markets through exchanges between buyers and sellers. For common property resources this mechanism does not function, and they must become the focus for collective or public management, unless they are to be severely overused and misused. This idea has been well developed in the economics literature with respect to particular resources like ocean fisheries. However, how pervasive common property problems have become has not been widely appreciated by economists—at least not until recently. I have noted with interests that the ecologists have discovered the concept of the commons—it appears independently. The basic reference here is Hardin's article "The Tragedy of the Commons" which has, I believe, been discussed by this subcommittee.

AN EXAMPLE—RESIDUALS FROM PRODUCTION AND CONSUMPTION

It is now clear that the main basis for collective action in our society is shifting from the need for cooperation to realize collective benefits to the urgent need to manage congestion more effectively and efficiently. We can be fully confident that this need will continue to rise very strongly in the future. An example can help to illustrate this point.

It is one of the most elementary concepts of physics that matter is conserved. Thus it is clear that in the production and consumption activities of the society the material substances which flow from our natural resources are not destroyed on their way through the economic system, but must in fact eventually return to the natural environment. As I indicated previously, our historic legal, economic, and governmental institutions were well designed to facilitate the process of extracting natural resources and guiding them efficiently to various uses in the economy. Thus, in general, our dependence on private property rights and the profit motive have served us well in developing our natural resources and converting them to useful goods. But what happens to the material substances after they go through this process and yield their utility to human beings? Clearly, these residuals have had to return to one of the natural environments. It was fortunate for the smooth operation of our production and consumption system that the residuals-receiving capacity of our land, air, and water environments was sufficiently large relative to the demands put upon them that, except for some local situations, no serious results followed from the free and unhindered use of these common property resources. However, the natural reservoirs of assimilative capacity are now rapidly filling up or, in my terminology, becoming congested, and the individual waste disposer imposes important external costs on others by his activities.

It is clear that the return of waste residuals to our common property environments confronts us with a severe problem, because our normal property and exchange institutions for regulating and controlling the allocation and use of resources cannot function in these spheres. We are thus confronted with a large-scale—indeed pervasive—and unfamiliar problem of collective action and collective management.

This problem is complicated by the fact that the dispersal of residuals—materials and energy—to the environment usually involves entropy. This process of dilution is ordinarily beneficial as far as local effects are concerned in that it lowers concentrations in the neighborhood of the discharge, thus attenuating destructive effects. The other side of the coin is that it spreads the residuals over much larger areas. This has two important corollary effects from the point of view of environmental quality management: (1) it makes recovery and recycle of materials and energy much less economical, both in the short and in the long run, and (2) it means that the damaging effects of residuals are widespread in space, often extending beyond the geographical scope of existing governments of general jurisdiction. The effects of waterborne and airborne residuals extend across air- and watersheds which will seldom, if ever, correspond to the boundaries of existing government units. Depending upon the persistence of the substance involved and the means or propagation in the environment, the range of effects may extend from a comparatively few miles (heavy particulates in the atmosphere) to large river systems (persistent organic chemicals), to the entire planet (CO_2 and radioactive fallout). Accordingly, society faces the need to pursue collective management efforts involving cooperation among existing units of government and the creation of completely new ones on a regional, national, and international scale with attendant severe problems of institutional conflict.

We urgently need to understand better how to build Government institutions which comport better with contemporary problems.

To say we should not use the environment at all for residuals disposal, that is, maintain a completely natural environment and suffer no manmade damages or risks is a simple and comfortable answer for some, and one which avoids all these difficulties. But this is, unfortunately, an utterly useless counsel of perfection. Conservationists and others often argue that no burden should be placed on particular environmental media such as watercourses. It is even possible that such a goal could be reached in a limited situation without drastic reduction in the production of other things. But as a moment's reflection (keeping principles of mass and energy conservation in mind) will make clear, this must be an outlandishly impossible objective for all environmental media taken simultaneously. The conditions required for doing this would be even more exacting than those for a spaceship, since even a spaceship could usually dissipate certain amounts of material and energy. It would be necessary to utilize only solar energy and hold all materials which could not be naturally recycled in closed-managed recycle. This is idealism run wild and very likely to be counterproductive to efforts to manage environmental problems in the real world.

Looking at matters this way also helps us to understand that there is very unlikely to be any spectacular technological "fix" which will allow us to escape the social problem of managing an environment which has been and will be profoundly modified by man's activities. What we must learn to do is manage our environmental resources. This will involve a combination of forbidding their use where adverse effects of any level of use are deemed to outweigh benefits (prohibition of DDT may be a good example), restricting their use through standards or, more desirably, explicit prices set by Government, and where feasible improving the quality of the resource through carefully planned acts of public investment and operation of facilities. These tasks must be viewed as being an inherent part of economics and Government in the contemporary world tasks which must be performed continuously and indefinitely. This means that responsibility for their performance must be built systematically into our Government structure and system of economic incentives. Needless to say this orientation is quite different from that which supposes that we can somehow go out and solve the problem completely in one decisive stroke. It doesn't make for very good drama because the emphasis is on persistence and strategy rather than acts of nobility or heroism, and "heavies" are largely missing from the cast.

Strategies for water quality management in the United States

I would now like to turn, as a specific example, to an area where I believe that research has already laid a reasonably satisfactory groundwork for implementing the type of strategy outlined above. This is the area of water pollution control. In my opinion our present strategy in this area does not have an orientation which will lead toward effective, efficient, and continuing management of the problem. Most of what I will say is discussed in more detail in a book by Blair Bower and myself called "Managing Water Quality: Economics, Technology, Institutions" (the Johns Hopkins Press, 1968).

To start with, I would like to characterize briefly what I take to be the present strategy of the Federal Government for achieving water pollution control in the United States. This strategy is based on two main elements. The first is financial support for municipal waste treatment plant construction. Such support started with the Federal Water Pollution Control Act of 1956 and has continued at higher levels of authorization since then. The 1966 act authorized $3.4 billion for municipal sewage plant construction grants over the period 1968–71. Under the act it is possible for municipalities to cover up to 55 percent of the costs of waste treatment plant construction from Federal grants.

The second element in our pollution control strategy was instituted by the Water Pollution Control Act of 1965 which required that all States set water quality standards on their interstate and boundary waters. These standards were to be completed and reviewed by the Secretary of the Interior by mid-1967. Understandably enough, there were some delays but the required standards are now for the most part in existence. The standards were to be accompanied by a proposed program for achieving them which could then be used as a benchmark against which to judge the need for Federal enforcement actions. Actually, while the Federal Government has had authority to bring enforcement proceedings against interstate polluters in the past, this program has been used only to a very limited extent.

Without in any way denigrating the great and sustained efforts made by Senator Muskie and others to provide us with effective pollution control legislation, I think it is fair to say that the results of our pollution control strategy up to this point have been disappointing to many. Municipal treatment plant construction has been lagging partly because Federal appropriations for treatment plant construction have fallen far behind authorizations (the authorization for 1970 is $1 billion and Congress has appropriated $800 million), and many people assert that municipalities are holding up construction until Federal funds become available. It is hard to say why Federal enforcement powers have not been more effective, but possibly it is because of the difficulty and cost of mounting effective enforcement proceedings, as well as the political power of the larger industries. Our record of trying to impose direct Federal regulations on large industries has been dismal. The recent hearings of the Subcommittee on Economy and Government of the Joint Economic Committee of the U.S. Congress, "Economic Analysis and the Efficiency of Government," are instructive.

Another recent Government report by the General Accounting Office has provided a rather devastating critique of the present strategy based primarily on the scattershot way in which support has been provided municipal treatment plants, the poor operation of existing plants, and the overwhelming growth of industrial discharges. In every major river system studied by the GAO, the conclusion was the same: we have failed to mount a significant attack against the major contributors to pollution. Relying exclusively on the tool of enforcement to remedy this situation would, I am sure, be awkward, unpleasant, expensive, and effective at best only in a static and shortrun sense.

As part of our subsidy-enforcement strategy, many bills have been introduced in Congress to provide Federal subsidies for the construction of industrial waste treatment plants. These proposals have for the most part so far not been successful. From the point of view of trying to achieve an efficient as well as an effective pollution control policy, this may be regarded as fortunate. For reasons that I hope will become clear in my further testimony, subsidies for industrial waste treatment would tend to be less efficient than incentives to adopt other waste reduction procedures, such as recycle and byproduct recovery. Moreover, they would have the unfortunate effect of diminishing the extent to which costs of using the common property resource are reflected in the goods which consumers buy, thus leading to too much consumption of them relative to their social cost of production. I was very pleased to note a recognition of the importance of this in the President's recent state of the Union address. In addition to efficiency considerations, many people also regard it as just or equitable that those industries and consumers who use common property resources to the detriment of others bear the cost of doing so.

Unfortunately, a certain amount of subsidy has already crept into the system. Some industrial plants are connected to municipal systems and can benefit from the subsidies to municipal treatment plant construction. Furthermore, the tax reform bill recently passed by Congress would provide for 5-year tax amortization of pollution control facilities and would, according to the testimony of Stanley Surey before the Joint Economic Committee, cost the Government $400 million a year in forgone revenue. In addition to the points already made about the inefficiencies of subsidies, a weakness of rapid tax amortization is that it cannot help those marginal firms which often serve as the excuse for subsidy arrangements. Tax writeoffs would seem to be a particularly perverse way to try to deal with the situation. They have the effect of providing most assistance where it is not particularly needed and, unless counteracted by other provisions, letting the industrial plant where assistance might be justified die. Subsidies of course do have the politically attractive feature of spreading burdens so widely that no individual has an incentive to scream very loud. If they can be hidden behind the complexities of the tax system, it's even better. When Charles Schultze was Director of the Bureau of the Budget, he used a sign hanging in his office which said, "If you can't solve the problem, subsidize it." There is an unfortunate amount of truth in this.

Several years ago, I proposed an alternative strategy for dealing with our national water pollution problems which, I think, has the support of those professional economists who have studied the matter. I believe if this strategy had been adopted, our efforts to improve the quality of our national waters would be substantially further advanced than they now are, and we would be moving into a position to achieve justifiable or desirable levels of water quality at the least cost to society. This proposed strategy was also based on two main elements. The first rests on the concept that the waste discharger should, insofar as possible, bear the damages his waste disposal activities impose on the common property resources of society, and the second recognizes that in many of our highly developed basins, where pollution problems are concentrated, great savings in costs can be obtained by the implementation of a systematic and well-integrated water quality management plan on a regional basis. The latter would contain elements other than just the treatment of waste waters at particular outfalls.

I would like to elaborate briefly on these points and suggest some ways in which the Federal Government might contribute to the development of the sort of strategy I have in mind. With respect to the first element, I think we must devise ways of reflecting the costs of using resources that are the common property of everyone, like our watercourses, directly in the decisionmaking of industries, local government, and consumers. The waste assimilative capacity of our rivers is a valuable asset, and these rivers have alternative uses which conflict directly with waste disposal. As I indicated earlier, because our property institutions cannot adequately be applied to resources like watercourses, they are essentially unpriced and treated as free goods, even though they are in fact resources of great and increasing value in the contemporary world. It seems to me that this unhappy situation cannot be remedied unless we move toward the implementation of publicly administered prices for waste discharge to watercourses and for the use of other common property resources.

Accordingly, one element of my proposed strategy for water quality management is a system of what I have termed "effluent charges." The proceeds from such charges would yield a rent on a scarce resource to society which could be used in various ways, including further measures to improve water quality, as discussed below. Also, and even more important, the effluent charge would provide an incentive to conserve in the use of the watercourses for waste discharge. Careful industry studies have shown that industries can often reduce waste discharges enormously, usually at low cost, if they are given a proper incentive to do so (see, for example, George Löf and Allen Kneese, "The Economics of Water Utilization in the Beet Sugar Industry" (the Johns Hopkins Press, 1968)). In many instances, the most effective means for reducing waste discharges is internal process change and recovery and recycle of materials that would otherwise be lost.

Similarly, under our present property institutions, municipalities are paying only part of the social costs of disposing waste to streams, and what they pay is rather capriciously distributed depending on how much waste water treatment they have implemented. The effluent charges system would give these municipalities and incentive to proceed expeditiously in the treatment of waste. Another point of some importance is that our present policies put heavy emphasis on the construction of plants with little or no followthrough on operations. Experts have pointed out that most treatment plants are operated far below their capabilities. The effluent charges system focuses on wha is put in the stream and thereby offers an incentive for effective operations of existing facilities. I realize that a number of persons have seen fit to dub the effluent charge "a license to pollute' in the hope, no doubt, that this cliché because of its emotive power would be regarded as conclusive argument. This mindless cliché has certainly not contributed to the cause of effective water quality management. It is also sometimes said that effluent charges cannot be implemented because industries do not know what they discharge to watercourses. The latter part of this statement is, unfortunately, frequently true. But isn't it high time that situation were remedied?

It should be clearly recognized that the present and proposed subsidy arrangements are quite different and, most economists would feel, less desirable in their impacts than the effluent charges system.

First, the system of effluent charges is based on the concept that efficiency and equity require payment for the use of valuable resources whether they happen to be privately or collectively owned. These prices will be reflected in the industrial producers' decision to install treatment equipment and otherwise reduce the generations of residuals. They will also be reflected in the price of intermediate and final goods so that a broader incentive will be provided to shift to goods with a lesser environmental cost.

Second, subsidies for treatment plant construction do not, by themselves, provide an incentive to take action to control waste discharges. Even if an industry is paid a mapor proportion of the cost of waste treatment plant construction, it is still cheaper, from the point of view of the industry, to dump untreated waste into the river. Thus the subsidy arrangement cannot work unless accompanied by enforcement or other pressures on the waste discharger.

Third, to the extent that the subsidy system works it tends to bias the choice of techniques in an inefficient direction. It would provide an incentive to construct treatment plants with Federal subsidy even though internal controls would be cheaper.

Finally, the effluent charges system yields revenue rather than further straining and eroding an already seriously overextended tax system. This revenue can be put to useful public purposes including improvements in the quality of our environment. From an economic point of view perhaps the best imaginable tax base is an activity that causes external diseconomies. Not only does a tax on such a base yield revenue, but it tends to improve the overall allocation of resources.

Most economists who have studied the matter have concluded that there are compelling reasons for favoring the effluent charges system as one of the cornerstones of effective and efficient regional water quality management. But it may be difficult for particular States and regions to pioneer such a substantial departure from previous practice. The Federal Government's greater insulation from powerful local interests provide an opportunity for leadership. One approach would be for the Federal Government to levy a national effluent charge on all waste dischargers above some minimum amount. The charge could be based on a formula similar to those that are used in the Ruhr area of West Germany[1] or one of those used by certain U.S. municipalities in levying sewer service charges upon industry. This charge could be considered a minimum which could at their discretion be exceeded by a State or regional agency having responsibility for water quality management. Revenues obtained by the Federal Government could be made available for purposes of financing the Federal program with the excess turned over to other governments of general jurisdiction or, and I think preferably, the revenues could be used to establish regional water quality management agencies which are the other element in my proposed strategy.

Research on water quality management over the past several years has clearly shown that major efficiencies can be obtained by the implementation of water quality management systems on a regional basis. In addition to the standard treatment of waste waters, such management systems could include a number of other alternatives closely articulated in planning and operation. These could include riverflow regulation, putting air directly into streams, brief periods of high-level chemical treatment during adverse conditions, and others. Studies of the Potomac, the Miami of Ohio, the Delaware, the San Francisco Bay region, and of other areas have shown beyond question the economies to be realized by this kind of regional approach. It appears that such an approach can only be effectively implemented by a regional river basin agency having the authority to plan, construct, and operate the necessary facilities. Again, there is a role for Federal leadership in the establishments of such agencies. So far, tendencies to support such an approach at the Federal level have been minimal.

The Federal Government could, of course, take direct action. It could set up regional water quality management agencies or regional water resource management agencies. These could be separate entities, such as TVA, or regional units of Federal agencies, such as proposed by the first Hoover Commission. There has been so much opposition to arrangements of this nature that it is questionable whether the Federal Government should or would be willing to move in this fashion. An aternative would be for the Federal Government to establish incentives and guidelines for the organization and operation of regional management agencies, either under State law or through interstate compacts. An agency with adequate authority to plan and implement a regional water quality management system would be eligible for a grant of funds to support a portion of its budget to help staff the agency and to make the first data collections, analyses, and formulation of specific measures for water quality management. If the Federal Government is satisfied that the proposed program and the plan for its implementation satisfy criteria for its efficient operation, the agency might be eligible for a grant to assist it with actual construction and operating expenses. Such a system might appropriately be limited to the early implementation—say, 5 years. During this period, it would be necessary to work out longer-term arrangements for financing the agency. Clearly, the proposed effluent charges system could play a major role in this. Presumably, administration of the effluent charges system would be turned over to the regional agencies with the Federal level of charges continuing to be regarded as a baseline. In this manner, regional scale measures would be financed while at the same time providing appropriate incentives to waste dischargers to cut back on their emissions. Special provisions might be included in the Federal law toward marginal industrial plants which might go under and where there is a broader social interest in protecting them. It should be noted that where serious efforts to implement regional water quality management has been undertaken (as in the Delaware and the Miami), one of the most serious problems has been to set up adequate financing arrangements.

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[1] More recently, effluent charges schemes have been brought into being in Czechoslovakia, France, and England. A law is pending which would bring such a scheme into being in Canada.

I have no doubt that Federal leadership toward implementation of an effluent charges system and the creation of regional water quality management agencies can put us on the path to continuing effective and efficient management of the quality of our waters. I believe that this approach merits serious consideration as a strategy for dealing with our serious national water pollution problem.

I would like to point out to the subcommitte, although the members may already be well aware of it, that one step in the direction of a strategy along these lines has already been taken. Senator Proxmire, joined by nine other distinguished Senators (Mansfield, Young, Nelson, Dominick, Case, Hartke, McGovern, Cannon, and Pell), has introduced a bill (S. 3181, Regional Water Quality Act of 1970) containing some of the essential elements of the above outlined strategy. I also regard the Senator's speech introducing the bill as an excellent statement and would, if permissible, like to submit it for the record of these hearings.

[From the Congressional Record, Nov. 25, 1969 Daily Edition, pp. S14971–S14976]

S. 3181—Introduction of the Regional Water Quality Act of 1970

Mr. Proxmire. Mr. President, we are losing the battle against water pollution. We are polluting our waters faster than we are cleaning them up. Despite the expenditure of over $5.4 billion by the Federal, State, and local governments between 1957 and 1969, we are falling behind in the battle. Despite the enactment of three major pieces of legislation, we are losing ground. Despite a loud public outcry, we are in worse shape now than when the first control legislation was enacted. Despite our most vigorous efforts, we have made little progress toward cleaning up our Nation's waterways in the last 10 years. A comprehensive review of our past efforts by the General Accounting Office released just 2 weeks ago confirms these conclusions:

"As a result of the approaches followed in the past, many treatment facilities have been constructed which, because of pollution from other sources, have not had an appreciable effect on reducing the pollution or improving water quality and uses of the nation's waterways."

For those of us who have labored long years toward getting the pollution control program started, the news is very discouraging. To hear that our best efforts have largely been in vain is very hard to take. The immediate reaction is to deny the facts. Many who have worked so hard will simply refuse to believe the facts. "What do you mean, we have not made any progress?" they ask. "What about all the legislation that has been passed, what about all of the money that has been spent? What about all of the desperate fighting to obtain the smallest concessions?" The question which must be asked, however, is how much cleaner is the water? The simple fact is that it is dirtier. Somewhere we have made mistakes in organizing the fight.

Yes, money has been spent. Yes, thousands of words have been written deploring the situation. And, yes, many laws have been passed. But the water is dirtier. There is more slime on its surface, there are more dead fish lying along the river banks, there are more beaches closed. What then is wrong? Where have we failed? The sophisticated observer will immediately declare that we have not spent enough money. And he is right—up to a point. But the question must be asked, what have we received for the money which has been spent? Very little is the GAO conclusion. But the problem runs much deeper than simply a lack of money. It runs into the very strategy behind our present efforts. It runs to the very heart of our current attack on the problem.

We have confused the means with the ends. We have awarded grants for the construction of waste treatment plants on a first-come-first-serve basis with little thought to their real contribution to cleaning up the water. We have become obsessed with the number of plants built, and have forgotten to ask how much cleaner the water is. We have emphasized the means and assumed the ends. But the means have not produced the desired results. We have built treatment plants, but many are lying idle or only partially operational due to a lack of skilled operators. We have built plants which handle such a small fraction of the actual pollutants being dumped in the waterway that they have produced no measurable improvement in water quality. The General Accounting Office summarized the problem very well:

"We believe, however, that the benefits obtained from the construction of the projects have not been as great as they could have been, because many waste treatment facilities have been constructed on waterways where major polluters located nearby—industrial and municipal—continued to discharge untreated or inadequately treated into the waterways."

To understand the real problem, a brief review of our present pollution control policy is needed.

Our present strategy is based on two central tenets. The first is a policy of Federal subsidies for the construction of waste treatment facilities. The second is the Federal enforcement policy against individual waste dischargers. In its simplest form, present policy amounts to one of the carrot and the stick. Federal subsidies are used to induce municipalities to construct municipal waste treatment plants. This is the carrot approach. The financial support for waste treatment plant construction was first introduced in the Water Pollution Control Act of 1956 and the authorization of funds for such subsidies has increased ever since. Under present provisions, it is possible for a municipality to recover from the Federal Government up to 55 percent of the cost of constructing treatment plants.

The other element of the present policy, the stick, is the collection of enforcement efforts initiated by the Federal Water Pollution Control Administration to bring individual polluters to heel and force them to increase abatement efforts. Unfortunately, comparatively few enforcement actions have been brought against individual polluters. The substantial economic and political power of these industrial polluters has been a serious roadblock to effective enforcement actions.

Although a number of waste treatment plants have been constructed, many of them are simply not equipped to handle the tremendous demands on their capacity to break down raw sewage. A severe lack of trained operators has aggravated the situation.

Much more important, however, than simple operational difficulties is the failure of the present efforts to deal with the major sources of pollution. The report of the General Accounting Office emphasized the fact that much money has been spent on plants which make only very limited contributions to improving river and stream quality because they handle such a small fraction of the total wastes dumped in the river. In every major river system studied by the GAO, the results were the same: We have failed to mount a significant attack against the major contributors to pollution.

I shall cite only one example studied by GAO to illustrate the point. The name of the river is withheld to protect the guilty:

"This example involves a 170 mile section of one of the largest interstate rivers in the United States. Although there are more than 20 municipalities located on this stretch, only six discharge their wastes into the river. Sixteen

Federal Water Pollution Control Administration Grants totalling about $6.1 million and two Accelerated Public Works Grants totalling about $1.6 million were made to five of the six municipalities between April 1957 and April 1969 for the construction of waste treatment facilities."

During the 12-year period studied from 1957 to 1969, the new facilities have successfully reduced domestic wastes poured into the river in terms of their biochemical oxygen demand by 14 percent. But domestic wastes account for only 25 percent of the total waste dumped in the river. Thus, the plants only served to reduce total pollution in the river by approximately 3 percent. However, during the same period, the amount of industrial wastes dumped into the river increased by an astronomical 350 percent—measured by the biochemical oxygen demand created which is needed to break down the waste. To quote the GAO report:

"The reduction in municipal biochemical oxygen demand (BOD) that has been accomplished (147,000 P.E.) is of little consequence when compared with the increase in BOD permitted to be discharged by industries (2.4 million PE). Thus despite the expenditure of over $7.7 million, we have allowed an increase in industrial waste equal to over 16 times the amount by which we have reduced domestic waste. The summary made by GAO of the experience is very enlightening:

"Thus, the construction of waste treatment facilities with the aid of $7.7 million in federal grants has not had an appreciable effect in abating, controlling, and preventing water pollution in this section of the river."

The real source of the problem should now be clear. Our present efforts, despite their admitted lack of funding, failed to even attack the major contributors to pollution—industries located along the river. A full 75 percent of the total wastes dumped into the river are created by industry and yet our present efforts have had almost no effect in controlling this source of pollution. In fact these sources of pollution increased almost 350 percent in the 12 years between 1957 and 1969. This better than anything else should show the inadequacy of the present strategy.

What is more, GAO makes it very clear that this is not an isolated example. The report itself contains seven other similar examples, all of them leading to the same conclusion that our present strategy has almost completely failed to tackle the major sources of industrial pollution.

The grim conclusion one is forced to draw from all of this is that our present strategy for combating water pollution has had only limited success in improving the quality of our Nation's waters. This is not to say that these efforts have not had the best intentions, that they were not possibly all we could do under the circumstances. Those of us who have fought long and hard for just this much know how difficult the battle has been. But we must not give up in the face of past disappointments. We must not become fatalists. What we must do is reassess the situation—see where we have made our mistakes and redirect our efforts to correct them. We must look ahead to a new plan, a new strategy before it is too late.

A NEW STRATEGY FOR POLLUTION CONTROL

To those searching for a new strategy, there is a great deal of hope. An alternative strategy does now exist. It is a proven strategy. Where it has been tried, it has met with great success. It promises to yield dramatic progress in a relatively short time. And the best part of it is that it is relatively simple. What it is not is a panacea which will stop all water pollution overnight. It does promise, however, to substantially improve water quality throughout the United States—improve it to a degree which present efforts could not hope to achieve for many years and only after the expenditure of hundreds of millions of dollars.

What is this new strategy? Like the present strategy, it is based on two essential elements. The first one is the imposition of a system of national effluent charges. The second is the development of regional agencies for planning and managing water quality on a wide basis. A brief explanation of these two techniques will help focus our understanding before we deal with them in detail.

First of all, we must understand that the so-called pollution problem is essentially an economic problem. Pollution is actually the wasted resources of our society. Pollution represents the marginal amounts of those resources which we have said are economically no longer useful. They are the limited quantities which it is no longer profitable to recover. Why are they marginal? Because we have said they are. We use resources only to the degree beyond which it is cheaper to get more of the resources. This is the value basis we use in our economic system. The direct consequence of this fundamental fact is that we must seek an economic solution if we are to attack the heart of the pollution problem.

Under the present strategy there is an economic incentive to continue polluting the environment. It is simply cheaper in many cases for an industry to pay a fine and continue polluting the water than to develop pollution control devices. It is one of sheer economics. The only way to reverse this system is to make it economical not to pollute. We must create a system which provides an economic incentive based on the profit motive to reduce the production of waste. This is the only permanent solution. Force is not the answer. We must make it profitable not to pollute the water. We must make it profitable for a company to recover those marginal resources which it has been wasting up to this time. We must make the water a resource which, like every other resource in the production process, has to be paid for as a legitimate cost of production

The first step in this new strategy would be the imposition of a system of national effluent charges. These charges would be levied as a form of rent for the use of the water to dispose of industrial wastes. The charges would vary depending on the relative demand placed on the water in disposing of particular waste products. The water can assimilate only so much waste. Each polluter would be assessed based on the quantity of the waste discharged and also on its relative strength and toxicity.

The water would be considered like any other productive resource which is used in the manufacturing process. Merely because it is part of the public domain, and not owned privately, is no reason why it should be considered as a free gift of nature to be despoiled without penalty. We do not allow industry to go into our national forests and cut timber simply because it is part of the public domain. It is sold to the highest bidder. Why should the water be treated any differently? It is just as much a productive resource as timber. The only difference is that its use cannot be easily allocated. We cannot sell the water the way we sell timber. We can, however, charge industry for its use based on the degree to which that use impairs its quality and purity. This is only fair. It is only rational.

There is no reason why the public should be made to bear the cost of cleaning up water which industry has used free of charge to carry away its waste products. Waste disposal is a legitimate cost of production. It is a normal cost of doing business. Why should it be treated any differently from any other legitimate cost? Business must be made to accept this doctrine. It must accept the fact that it is not the only group competing for the water's use. Sportsmen have a right to fish the same water. The public has a right to pure drinking water. Both the public and the firshermen pay for the use of the water. Why should industry be exempt? These are the reasons for the imposition of effluent charges—to make sure that industry pays its fair share like any other water user.

Each type of waste now dumped in our waterways would be assessed a certain amount per pound based on the relative demand it places on the water's capacity to assimilate and break down wastes.

Since the charges would be levied on a per pound basis, there would be a direct incentive for polluters to reduce their waste production in order that a major part of the charge would be eliminated. As new technology develops for limiting waste discharges even further, the effluent charge would provide a continuing incentive to install the most up-to-date production processes to cut down on waste production and thus reduce the total bill. The ultimate goal, of course, would be to "loop the system" where all of the resources put into the system would be totally used in the manufacturing process, and, therefore, there would be no wastes discharged into the environment.

ADVANTAGES

What exactly are the advantages of implementing such a system of effluent charges? There are a number of very important advantages: First, and perhaps most important, the imposition of such a system will enable us to make rapid strides in a relatively short time toward significantly improving the quality of our Nation's waterways. The proposal would attack the major sources of pollution, unlike the present efforts which have dealt with only a fraction of the problem. The economic incentives not to pollute would be very strong. There would be almost an immediate impact due to the natural desire of polluters to reduce their charges as soon as possible. That this is not merely theory; but what has actually happened in practice is shown by a number of examples where the system has had spectacular success.

Several examples where towns have imposed so-called sewerage charges on industry for the use of the town's waste treatment plant provide excellent cases in point. These sewerage charges are very similar in their impact to effluent charges. The first example is a major industrial operation in Otsego, Mich. The town's waste treatment plant had been designed under the assumption that it would have to handle about 500 pounds of biochemical oxygen demand per day in 1983. However, by 1965 the actual biochemical oxygen demand—BOD—load from the town's major industrial operation alone was about 1,500 pounds per day. The city commission decided to charge the company for all expenses for treating wastes from the industry above 500 pounds per day.

The first monthy billing of the firm after the initiation of the surcharge was based on an estimated biochemical oxygen—BOD—load of 27,000 pounds. This represented a total of 900 pounds per day, down from 1,500 pounds before the tax. For the second 30-day billing period, the firm's biochemical oxygen demand—BOD—load was down to about 22,000 pounds—733 pounds per day, down over 50 percent from the original 1,500 pounds per day. For the third billing period after the charge had been initiated, the BOD load was down to about 15,000 pounds—500 pounds per day, or approximately the BOD load projected for 1983. Thus in 3 months the effluent charge had led to a 66-percent reduction in the amount of untreated wastes released by the plant. What is more the effluent charge had brought the total waste discharged down to the base amount which the city had agreed to handle. The response to the charge was obvious, and very rapid. It is very questionable whether current Federal enforcement efforts would have been able to achieve nearly the degree of success in nearly the same time.

The second example is the development and initiation of a sewer surcharge in Springfield, Mo. Faced with sharply rising waste loads in 1962, Springfield decided to apply a surcharge on industrial waste discharges above the normal strength of sewage. The rationale, like that of the bill we are introducing today, was to provide an incentive for industrial operations to reduce waste discharges and would provide funds for expansion of the city's treatment plant facilities. Each plant discharging sewage above the permissible concentration was notified of the amount of the prospective surcharge, and of the fact that the city would review the assessment whenever a plant made operational changes. Even before the first official billing, some plants began to take action. A packing plant that faced an assessment of about $1,400 per month modified its production processes and ended up with a sewer bill of only $225 per month. A commercial laundry, faced with a large monthly surcharge because its waste discharge was warm and had a relatively high concentration of suspended solids, made changes that resulted in a significant net savings in its production costs even with the sewer surcharge. Many other industries in the town took similar swift corrective action and reduced their charges substantially.

Dr. Allen V. Kneese, a Ph. D. in economics, one of the leading authorities on the economics of water pollution control, and incidentally, the man who called this action to the attention of the Joint Economic Committee a few months ago, when he appeared as a witness, summed up the experience of various communities with sewerage or effluent charges in his book entitled "Managing Water Quality, Economics, Technology, Institutions": "The responses of industrial operations to the imposition of sewer charges can be generalized as follows. First, the imposition of a charge or surcharge tends to encourage plants to make changes that in many cases reduce not only the volume of effluents, but the water intake. Second, sewer charges tend to induce an examination of production processes that often uncovers relatively simple modifications which may result in net reduction in total production costs."

Thus, a system of effluent charges can be expected to provide significant improvements in water quality.

The second advantage which would result from the imposition of a system of national effluent charges is that it would assign responsibility for pollution control to those who are responsible for the pollution. In other words the polluters would pay for the damages caused by pollution, not the public at large. Recently, there has been increasing recognition of the importance of this fundamental doctrine that those who are responsible for pollution should be responsible for cleaning it up. The Water Quality Improvement Act of 1969 recognizes this essential responsibility when it charges oil companies, not the public, with the responsibility for cleaning up any future spills and for restoring the quality of the damaged environment. The bill we are introducing today strengthens this emphasis. We must restore the fundamental tenet that the polluter and not the Government must be ultimately responsible for cleaning up the environment. The annual report of the Council of Economic Advisers supports this view and recommends a system of effluent charges to develop a sustained revenue system to fight pollution. I quote from the report:

"Although it must assist in eliminating the large backlog of capital requirements, the federal government cannot and should not finance local waste treatment indefinitely. In the long run, localities should collect revenues from the polluters adequate to sustain the system and to expand it in line with normal growth. Charges based on use of treatment facilities provide long-run incentives for the abatement of pollution. Effluent charges on polluters in sections of the river where there is no municipal treatment could have a similar effect; when waste discharge is costing industrial firms a certain amount for each pound discharged, the volume of waste will be reduced and the revenue collected will help to pay for collective treatment."

The third principal advantage of a system of effluent charges is that it would contribute to the ultimate solution of the pollution problem; that is, the reduction of waste production. Much of our present effort is directed toward converting one form of waste into another form of waste which is considered less obnoxious. In the process we may actually create more waste. We are merely changing the form of waste, not eliminating it. Without concentrated efforts toward actually cutting down on the amount of waste, not modifying its form, we will be shortly faced with a situation where the production of waste will overtake our ability to dispose of it. If we are to survive in a society which uses enormous amounts of matter and energy, we must find ways to reuse that matter and energy that we now give off as waste.

The imposition of a system of national effluent charges will provide the strongest possible incentives for the maximum use of our productive resources, and thus the reduction of waste. This is where "looping the system"—that is, converting waste into new resources—becomes so essential. Not only will this conserve valuable natural resources which are irreplaceable, but it will dramatically cut down on our waste production. This is, without question, one of the most important long-range advantages of the effluent charge technique for handling pollution. The technology exists today in many cases for "looping the system." The only thing lacking is an economic incentive to put it to work. The bill being introduced today will provide this needed incentive.

The fourth major advantage of imposing a system of national effluent charges would be that such a system would provide revenue which could be utilized to further pollution control efforts in other sectors of the economy, most notably in eliminating domestic wastes produced by our municipalities, and, of course, to reduce the enormous size of our Federal budget.

The bill we are introducing today would provide that 50 percent of the revenue collected would be redistributed to the Nation's municipalities to assist them in the construction and maintenance of waste treatment facilities. Mr. President, there is nothing more obvious today than the funding gap between authorizations and appropriations for the construction of waste treatment facilities. Every Member of this body is aware of the critical need for more money for pollution control efforts. Unfortunately the Federal fiscal outlook today is not promising for increased pollution control expenditures. Unless an alternative source of funds is found, the present gap will almost certainly continue. The situation will continue to get worse instead of better.

This bill would provide much of the additional needed revenues. It has been estimated by Dr. Kneese, already mentioned, that an average effluent charge of 10-cents per pound of waste applied on a national basis would yield, at present waste production rates, approximately $2 billion in revenue each year. Of course, it is expected that the actual amount collected would be lower due to improvements made by industry to reduce their waste production.

Conservatively, however, Dr. Kneese estimates that in the first year of operation, the effluent charge system could be expected to produce a minimum of $1.5 billion in revenues which would then be available to the municipalities for the construction of waste treatment plants. This is almost seven times the amount which would be provided by the Nixon budget, almost three times the amount the House has voted, and 1½ times the amount which has been authorized by the Senate for the current year. In view of the fact that there is a $2 billion backlog for Federal funds alone, the need for increased revenue is painfully obvious. This bill would provide that revenue.

Fifth, the bill will provide strong economic incentives for the creation of regional water management associations. These associations will provide the necessary coordination to make a comprehensive attack on a region's water pollution problems possible. They will also enable us to take advantage of significant economies of scale which can be realized in treatment efforts. This will sharply reduce the costs associated with water quality improvement.

What is more important, the bill will allow the maximum possible freedom in developing these water management associations. Existing associations such as the Delaware River Basin Commission, will be encouraged to develop comprehensive plans for treatment works and other control measures as soon as possible. Once the Secretary of the Interior is satisfied that these plans are adequate, he is empowered to turn over to the commission grants from the special trust fund for the construction of regional water improvement facilities. Thus, the bill looks toward turning ultimate responsibility for water quality management over to associations which can provide the necessary coordination between industry, local governments and State and Federal authorities.

SUMMARY OF ADVANTAGES

Thus, the bill presents five principal advantages: First, it promises to sharply improve water quality in a short period of time. Second, it places responsibility on the polluter, and not the public, for paying for damage to the environment. Third, the bill works toward an ultimate solution to the pollution problem by encouraging waste reduction rather than waste conversion. Fourth, the bill will provide substantial new sources of sorely needed revenue to finance the construction of municipal waste treatment facilities. Fifth, and perhaps most important, the bill provides strong economic incentives for the creation of regional water management associations.

ADVANTAGES FOR INDUSTRY

The bill, however, has advantages not only for those concerned with cleaning up our waters, but for those who are doing the polluting. The immediate reaction I have obtained from some people with whom I have discussed the bill is, "How about businesses that have to use water for legitimate and desirable productive purposes? How will they be affected?"

Mr. President, I think there may be some private support for this measure among the industries involved. To the industrialist who is faced with paying the charges, the bill has advantages over the present strategy. Faced by massive public demands backed by Federal and State enforcement efforts to clean up pollution, the industrialist is faced with two alternatives. He can either support a system of effluent charges which will enable him to make his own decisions as to how best to reduce waste production through changes in his production processes, at his own speed, or he can continue to face increasing Federal and State pressure to stop all pollution by a date which is imposed on him. It is a choice between force and freedom. In either case, the public demands that our waters be cleaned up—and soon. The demand is clear. It will not go away. It will only increase in the years ahead. Something will be done. The only question which now remains is, how will it be done? For the industrialist, our bill presents an alternative, an alternative much more attractive than what he can expect to face in the next few years under the present system.

ADVANTAGES FOR CONSERVATIONISTS

For the conservationist who is concerned over ends, that is, actual improvement in the quality of the water, the bill also has advantages. Some may charge that the bill does not demand a complete halt to all water pollution immediately. Of course, that is true. The point is, however, given the practical impossibility of enforcing absolute standards against industry, the bill provides the most reasonable alternative. The bill provides strong economic incentives, incentives industry understands, to clean up pollution. The results will be much more sweeping than those obtained from isolated enforcement efforts to stop all pollution in a given industry. The difference is that the effluent charge approach will provide the maximum across-the-board improvement in water quality. And this is what we should be interested in. Ideal standards which cannot possibly be enforced are equal to having no standards at all. We must accept economic and political realities. We must seek the optimum solution, whether or not it represents the theoretical ideal. If we want clean water, not ideal standards, then the effluent charges technique is called for. The crisis is too serious to argue over ideal standards. We must begin to move swiftly and we must adopt the strategy which will give us the maximum amount of improvement in the shortest time. The system of effluent charges will do this. It will give us cleaner water in a short time, and that is what we should be concerned about.

WHO SUPPORTS EFFLUENT CHARGES?

Perhaps most important, the effluent charge technique has substantial support in the Federal Water Pollution Control Administration, the principal agency involved in the problem. In a comprehensive study of the Delaware Estuary, the FWPCA concluded that—

"(1) Effluent charges should be seriously considered as a method for attaining water quality improvement. (2) A charge of 8 to 10 cents per pound of oxygen demanding material discharged appears to produce relatively large increases in critical dissolved oxygen levels. (3) A charge of that level is not expected to cause major regional economic readjustments (such as the closing of industrial plants) in the study area (Delaware River Estuary). (4) The charge method attains the same goal as a conventional method of improving water quality, but treatment costs are lower, and the effect on waste dischargers is more equitable. Also the charge provides a continuing incentive for the discharger to reduce his wastes discharge and serves as a guide to public investment decisions."

The effluent charge program also has the support of the Council of Economic Advisers and the Environmental Pollution Panel of the President's Science Advisory Committee. In addition, the President's Task Force on Pollution Abatement consisting of representatives from the Bureau of the Budget, the Council of Economic Advisers, the Department of Commerce, the Department of the Interior and the Treasury Department strongly recommended a system of national effluent charges. What is more, the effluent charge technique has the support of most major economists and is supported by such research organizations as Resources for the Future, which has done substantial research into the system, and strongly recommends its implementation in the United States. Thus the concept is not new, and it has the support of major elements in the Government including the major water pollution control agency.

I might say, Mr. President, that this is a technique that has been used for some years, with great success, in Europe, where, of course, industry is much more intensely concentrated, and thus pollution could be a much more serious problem. It has been the principal technique which has kept the Rhine River, for example, from being the terrifically polluted type of stream which so many of our waterways, like Lake Erie and other areas, have become. It works well, and has been adopted in Canada as well as in Europe.

WHAT WILL THE BILL DO?

The bill we are introducing today directs the Secretary of the Interior in conjunction with the Secretary of the Treasury to establish a schedule of charges for those substances which detract from the quality of our Nation's waters. The charges will be based on the damage different substances inflict on the water. Each polluter will then pay an amount based on the quantity of particular wastes he dumps into the water. At any time he may petition the FWPCA for a change in his total charges due to improvements he has made in the productive process which cuts down on wastes.

Fifty percent of the revenue collected will then be redistributed to municipalities for the construction of municipal waste treatment plants. The remaining 50 percent will be placed in a special trust fund which will be allocated to the regional associations once they receive certification from the Federal Water Pollution Control Administration. This will enable the cities to construct many of the badly needed waste treatment facilities which have not received adequate funding in recent years. It will also provide strong economic incentives for the formation of regional water management associations which can provide a coordinated attack on water pollution problems.

Mr. President, the Nation's water crisis is getting more serious. The need for a new strategy of attack is only too clear. The water is getting dirtier, not cleaner. Unless a new strategy is developed, it may be many years before any significant progress is made against water pollution. The bill we are introducing today provides that new strategy. It promises to yield significant improvements in water quality in a short time. It will do this in an equitable manner. It will do it less expensively than is possible using coersion. Most important, it will contribute to the ultimate solution of the pollution problem, that is the reduction of waste. As the distinguished Senator from Maine (Mr. Muskie), who has been a great leader in this area, has stated:

"Any concept of the environment—air, water, or land—as an infinite reservoir, with an infinite capacity to dilute, disperse, and assimilate waste is outmoded and irresponsible . . . [We must] shift the focus to waste management and reduction as the most effective guarantee of environmental improvement."

The bill we are introducing today will work toward this end. As Senator Muskie has indicated, we must look to the future. This bill is an effort toward that end.

Mr. President, I introduce this bill in behalf of myself, the Senator from Montana (Mr. Mansfield), the Senator from Ohio (Mr. Young), my colleague from Wisconsin (Mr. Nelson), the Senator from Colorado (Mr. Dominick), the Senator from New Jersey (Mr. Case), the Senator from Indiana (Mr. Hartke), the Senator from South Dakota (Mr. McGovern), the Senator from Nevada (Mr. Cannon), and the Senator from Rhode Island (Mr. Pell).

I ask that the bill be appropriately referred, and that it be printed in the Record at this point.

The PRESIDING OFFICER (Mr. Allen in the chair). The bill will be received and appropriately referred; and, without objection, will be printed in the Record in accordance with the Senator's request.

The bill (S. 3181), to provide a program of pollution control in selected river basins and waterways of the United States through comprehensive planning and financial assistance to municipalities and regional management associations for the construction of waste treatment facilities, introduced by Mr. Proxmire (for himself and other Senators), was received, read twice by its title, referred to the Committee on Public Works, and ordered to be printed in the Record, as follows:

"S. 3181

"SHORT TITLE

"SECTION 1. This Act may be cited as the "Regional Water Quality Act of 1970".

"FINDINGS AND PURPOSE

"SEC. 2. (a) Congress finds and declares that the clear, fresh, natural waters of the Nation's rivers, lakes, streams, estuaries, bays, and coastal areas have become despoiled and unsightly dumping grounds for the wastes of our industries and for the raw or inadequately treated sewage of our communities; that there is a national concern for the potentially harmful effects of these waters to our health and welfare, for the esthetic qualities of these waters, and for the suitability of these waters for municipal, agricultural, industrial, recreational and wildlife and sport and commercial fish uses; that there is a national urgency to control, prevent, and eliminate polluting substances in these waters through the construction, where appropriate, of coordinated river basin or areawide waste treatment works if these waters are to be reclaimed and restored to adequate standards of quality for our health, welfare, and resource needs; that present Federal programs now authorized to provide financial assistance in the construction of such works are inadequate to meet the rising demand for the works and that these programs have focused on the need for individual municipalities to construct treatment facilities rather than on coordinated efforts to clean up entire river basins and attack all major sources of pollution; that these present programs need to be supplemented by a program which focuses on a coordinated regional approach which provides desirable economic incentives to water users to conserve water and to minimize pollution through reduction in the quantity of waste products dumped into these waterways and which will encourage the formation of interstate regional water management associations which ultimately will assume full financial responsibility for the provision of waste treatment works in the most effective and economically efficient manner.

"(b) It is therefore the purpose of this Act to encourage the formation of permanent regional water management associations which are responsible for the preparation and development of comprehensive pollution control plans for all or part of a river basin or parts thereof that is consistent with or part of a comprehensive river basin water and related land use plan for the area. These objectives shall be accomplished through—

"(1) the establishment of economic incentives to water users to conserve water and minimize wastes and to join together in regional water management associations to promote the most efficient use of the water sources of the region; and

"(2) the provision of financial assistance to municipalities and regional management associations for the construction of waste treatment facilities.

"DEFINITIONS

"SEC. 3. For the purposes of this Act the term—

"(1) 'Secretary' means the Secretary of the Interior;

"(2) 'construction' includes preliminary planning to determine the economic and engineering feasibility of waste treatment activities, the engineering, architectural, legal, fiscal, and economic investigations and studies, surveys, designs, plans, working drawings, specifications, procedures, and other action necessary to the construction of such facilities; and the erection, building, acquisition, alteration, remodeling, improvement, or extension of such facilities; and the inspection and supervision of the construction of such faciliites;

"(3) 'waste treatment facilities' means the various devices used in the treatment of sewage or industrial wastes of a liquid nature, including the necessary intercepting sewers, outfall sewers, pumping, powers, and other equipment, and their appurtenances, and includes any extensions, improvements, remodeling, additions, and alterations thereof; and

"(4) 'State' means a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, and Guam.

"NATIONAL AFFLUENT CHARGES

"SEC. 4. (a) In furtherance of the purpose of this Act, the Secretary and the Secretary of the Treasury shall prescribe such regulations as are necessary to establish and put into effect not later than June 1971, a schedule of national effluent charges for all those substances other than domestic sewage which detract from the quality of the water for municipal, agricultural, industrial, recreational, sport, wildlife and commercial fish uses. In determining such charges the Secretary shall consider the relationship between the quantity and quality of the waste discharged and the resulting damage to the quality of the waterway as the base for specific charges.

"(b) Revenues collected by the Secretary of the Treasury pursuant to such charges shall be deposited in a trust fund (hereinafter referred to as the 'fund') in the Treasury to be available without further appropriation to the Secretary for use as prescribed in section 5.

"(c) Any person who violates any regulation established pursuant to this Act shall be subject to a civil penalty of not less than $1,000 nor more than $5,000 for each violation. Each day of such violation shall constitute a separate offense. Such penalties may be compromised by the Secretary, when deemed in the public interest.

"(d) The United States district courts shall, upon petition by the appropriate United States attorney or the Attorney General on behalf of the United States, have jurisdiction to restrain violations of regulations established pursuant to this Act.

"USE OF FUND

"SEC. 5. (a) The Secretary shall distribute amounts received in the fund in each fiscal year according to the following formula: fifty per centum shall be allocated to municipalities for the construction of waste treatment facilities in accordance with section 6, and fifty per centum shall be allocated to regional water management associations for the construction of waste treatment facilities in accordance with section 7.

"GRANTS TO MUNICIPALITIES

"SEC. 6. From allocations pursuant to section 5 the Secretary shall make grants to municipalities in any State for the construction of waste treatment facilities. Such grants shall be made on a priority basis determined by the Secretary in accordance with the purpose of this Act in such manner as to provide for such facilities where the need is greatest.

"GRANTS TO REGIONAL MANAGEMENT ASSOCIATIONS

"SEC. 7. From allocations pursuant to section 4 the Secretary shall make grants to regional management associations for the construction of waste treatment facilities. Such grants shall be made (1) in amounts determined on the basis of the population of the area to be served and the urgency of the need, and (2) subject to the condition that—

"(A) the association has developed and submitted to the Secretary a comprehensive water pollution control plan for the region over which it has jurisdiction;

"(B) such region covers the area of one or more river basins in one or more States or is an area in one or more States of related land uses;

"(C) the Secretary determines that such plan provides for a coordinated attack on water pollution and other related conservation problems in such region; and

"(D) such association is a permanent organization with authority (including enforcement authority) to carry out such plan.

"OTHER CONDITIONS AND REQUIREMENTS

"SEC. 8. The Secretary may establish by regulation such other conditions and requirements for grants pursuant to this Act as he determines necessary to carry out the purpose of this Act."

Mr. REUSS. Thank you, Dr. Kneese.
Dr. Willard.

STATEMENT OF DR. BEATRICE E. WILLARD, VICE PRESIDENT, THORNE ECOLOGICAL FOUNDATION

Dr. WILLARD. Thank you very much, Congressman Reuss.

We of the Thorne Ecological Foundation are grateful for this opportunity to express our views on this subject.

You have my statement, so I will summarize very briefly, because I think perhaps the questions and responses will be more interesting and valuable.

It is interesting to me to listen to Mr. Brower and Dr. Kneese here this morning because their ideas, although we have not collaborated at all on this, really complement some of the things we are very concerned about and very eager to emphasize.

The first is that as an ecological organization, we are particularly anxious that in trying to solve all of the grave environmental problems of the Nation and to effect what help we can to the world in this region, that we take an ecological view of the whole project and by this we mean a long, broad, comprehensive view.

As an illustration of this, I would like to draw an analogy with the way that NASA works when getting ready for a spaceflight.

All of the various facets of the life-support system for the astronauts are reviewed in detail in advance. They go through experiments; they feed all of the information into computers and have everything programed in advance to make sure as much as possible that everything is going to really work in concert because they do not want the astronauts to get to the moon and not get back.

Thorne Ecological Foundation would like to see the same kind of approach in relation to the life-support system of the Nation, localities, and regions.

Dr. Kneese, I appreciated your comment about the regional river basins. I think it is a very ecological approach. I cannot help but believe that economics and ecology come together here somewhere.

And the second point—I am not an economist and it is with a bit of trepidation I follow an outstanding economist on this point—but the more I study ecology, the more I am convinced that good ecology is good economics. And we have many examples of this, both bad and good, in our Nation.

I have chosen to emphasize two good examples:

More than 50 years ago we established the national forest system and some of the practices of the forest system in sustained yield management of our timber resources are basically good economics as well as good ecology because they keep the system at a point where it can continue to be productive, healthy, viable, and carrying on all of its processes with the least amount of input of time, energy, and money from us.

We have many examples in which, when we do not do this, and we want to again use that same ecosystem productively, we have to invest vast amounts of money and effort, on which we do not always get a recovery of investment or ecosystem.

I had the experience a few years ago of going to see where the Scottish people were trying to put a forest back together again. And they just have not been able to do it with significant input of scientific expertise and considerable money and effort.

And we have many examples of this fact in the world; we have some in our own Nation.

The second example, very briefly, is that good economics and good ecology have joined forces in the operation of the Taylor Grazing Act. I am not trying to say these things are operating perfectly at this point. They are not. But the Taylor Grazing Act was an attempt to realize that there is a balance, that, when we have a healthy, viable ecosystem operating with man realizing he is a very vital part of it, the whole idea of exchange of materials, cycling of materials—this idea you brought out on an economic basis, Dr. Kneese—is very ecological, too.

And when we realize we do not own all of these things, and cannot do whatever we please with them in our lifetime, then we come to a very different way of, as Mr. Brower so well said, "loving the ecosystem."

Interrelated with all of this, of course, is that we must realize that we have to stabilize the population and perhaps even decrease it. This, to an ecologist is the A, B, C's, really, and we practice it with all kinds of other organisms. We do not try to crowd plantations with trees; we do not try to overcrowd fields of wheat; we do not try to overcrowd cows and sheep on rangeland or pastures. But somehow we have not ever quite seen that this same biological principle applies to us as a biological entity.

I could not help but think of the double meaning of the words "dense" used by Mr. Brower. How dense can we be intellectually and biologically on this point. The result can only be to dilute our capacities, our resources, and to augment environmental problems.

It is, of course, the same thing we face in relation to inflation: As long as we inflate the population, the individual's value and capacity goes down; his ability to influence anything goes down. It also increases the environmental problems very severely.

You asked us eight very challenging questions, Congressman Reuss, and I have a few comments on some of these. Certainly they are not the solution.

The first thing, we feel very strongly that the Nation needs a National Center of Ecology. Whether we call it ecological action, ecological health, or coordination, whatever, we need something that is looking at the total ecosystem of the Nation and all of the individual ecosystems that comprise it.

The first thing this organization needs to do is to make a survey of existing resources.

Now, we have forest surveys, soil surveys, geological surveys. But never have we really looked at all of these resources at one time in concert—as ecosystems.

I realized this so well a few years ago when the hearings were being held on the central Arizona project. A representative from Texas was wanting more of the NAWAPA water in Texas.

"What did he want to do with it?" the Louisiana representative asked.

"We want to grow cotton."

"Why do you want to grow cotton, when we are getting paid in Louisiana to keep it out of production?"

And ecologically, this is a very good question.

And this center would have many duties: It would institute the research programs to augment present ecological knowledge. It would act as a clearinghouse for information and it would provide teams that could help all types of groups that are trying to solve ecological problems. The center might have a commission which would review all types of projects that have some environmental impact so that they might be scrutinized to avoid detrimental ecological effects, duplication, or acting at counter-purposes.

The center would hopefully determine what the optimum density is for the population of the United States. It would also develop education programs to lead us into better understanding our role as stewards of land and sea.

Then, we have some other suggestions that we think would be helpful. Often the public agencies, which are supposed to serve the public good, are in fact the enemies of the environment. This was very clearly seen in relation to the fight over the dams in the Grand Canyon. Rapid action is needed by all agencies to review all theirs projects from the standpoint of ecological impact. All new projects should be stopped now until it can be determined how they are going to affect the environment, and how many of these projects are really going to be needed.

Another question put to each project should be "How does it fit into a total plan, not just a plan for the Colorado River Basin or some other place?"

But I often think, in relation to ecology, that if we ran our individual or national bank accounts the way we run our ecology in this Nation, we would all be bankrupt already. We are always looking at ecology in a very short-term way; and life is long-term. It has been here a long time and hopefully it will be around a long time longer, and I want man to be here with it, too.

And we need to hopefully get the land management agencies updated, as well as the project agencies. All of these organizations are doing a creditable job. Although we may differ with them on various points, we are not saying they are dishonest in any way. But with the present information explosion man needs to be retreaded intellectually every 5 years. Some of the agency people have been in office for 35 years and they have never had much opportunity for "intellectual retreading." In addition the agencies all need to review their policies their programs, their information, and to bring it up to date ecologically.

Also, to emphasize the hearing you held last summer on population, and to underscore what the President has said on this same subject is highly important. A real forceful positive program on population stabilization is a very crying need.

I haven't any brilliant ideas about exactly how to go about it, but maybe we can start in some small way. For instance, the income tax system certainly puts a premium on children rather than in any way benefiting those who do not have children. As it now stands, the more you have, the more deductions you get, not that a deduction necessarily pays for a child.

In regard to the question you asked about on litigation as one of the ways to handle some of these environmental problems, having closely observed three in the State of Colorado in the last 9 months, I would say that this is a very costly, slow-moving, and not necessarily effective method of handling the environmental problems that face us.

In the first place, it often stops people from action rather than propelling them into it, because you have to be awfully mad and awfully desperate to use the tool.

Of course, we are being led by effective people in this area, such as Victor Yannacone. He is certainly giving people courage, but he also charges a high retainer.

I think there are some other avenues, institutions such as the Labor Relations Board, public land courts, review systems, and so forth.

And I would like to see—since we still are, and I hope we remain so for some time, a capitalistic Nation—that we would use some ways and means of encouraging industry and private individuals to take positive action. In legislation that is passed in relation to air and water pollution and other kinds of environmental controls, we should not necessarily always think about means of negative slapping of hands. And this would mean, perhaps, putting a floor, a threshold that has to be met, and then leaving a ceiling off so the industry could go as far as they wanted, they might be motivated to do more.

I think that sums up my remarks. We certainly appreciate the opportunity.

(Dr. Willard's prepared statement follows:)

PREPARED STATEMENT OF DR. BEATRICE E. WILLARD, VICE PRESIDENT, THORNE ECOLOGICAL FOUNDATION

I am Dr. Beatrice E. Willard, vice president of the Thorne Ecological Foundation in Boulder, Colo. This organization appreciates Congressman Reuss' invitation to voice its thoughts on what needs to be accomplished during the "Environmental Decade" of the 1970's in order to solve the Nation's many environmental problems. We at Thorne have three major interrelated points we would like to emphasize in regard to the "Environmental Decade of the 1970's."

First and foremost, as ecologists, we are concerned that an ecological approach be used in seeking solutions to the many environmental problems—air pollution, water pollution, land degradation, poisoning of plants, animals, ourselves, with "miracle chemicals," extinction of species, and most of all the human population explosion. The ecological approach first takes a broad long view of the environment and its problems as an entirety—of the ecosystem as the complex, multidimensional fabric that it is. Having taken this integrated wide view, then comprehensive solutions must be sought. This does not mean that individual solutions to the above-mentioned conditions are ineffective—but it does mean we should know in advance where and how these solutions fit into the whole life-support system and what effects these individual solutions may have on the total ecological fabric. Otherwise, we may end up with a thread here knotted to one over there, and so forth—pulling the whole fabric up into a functionless ball.

As an example of how this broad view could function, an analogy with the operation of NASA is useful. NASA, in preparation for each spaceflight thoroughly analyzes all facets of each flight—before, during, and after—to ensure its success; to avoid predictable problems; and to maintain the mechanical life-support system in equilibrium with the demands upon it. This attitude of total scrutiny of action, when applied to the impact that man has had on ecosystems, can be very beneficial to the Nation and the world, at a time when concern for the environment has never been greater.

To continue the analogy, NASA uses the latest theories, mathematical models, and equipment of systems analysis to accomplish its huge task of coordination, judgments, and decisions necessary to maintain a living system away from this planet. Data from all parts of the system are fed into computers that are preprogramed to yield information and instructions to keep all systems "go"; or to sound an alert, if some system is not "go." Such an approach to the ecosystems of this Nation—of which man has long been an integral and vital part—could better enable him to harmonize his activities with those of the systems, in such a way as to operate at optimum levels much, if not all, the time. In this way he would frequently avoid ecological disruptions; instead he would operate in a constructive role in ecosystems. A branch of the science of ecology—systems ecology—is presently addressing itself to just this task.

Second, we would like to point out that the good ecology is good economics. There is wide belief and feeling among leaders in business, and some Government agencies, that good ecology is too expensive; that the cost of concern for the environment cannot be transmitted to the consumer; that the choice is either ugliness and prosperity, or beauty and bankruptcy; either clean rivers and closed factories, or water pollution and active economy. But as a result of this contention, we are also witnessing the fact that utilizing ecosystems for short-term gain can result in a long, and far more costly process of restoration.

Interestingly, the words "ecology" and "economics" come from the same Greek root: oikos, meaning "home" or "habitat." Therefore, it is not surprising that some of the principles of these fields interrelate, especially those having to do with balance, stability, diversity, the integrated interaction of components, as well as inflation.

That good ecology is good economics is illustrated by some of our national activities:

1. The congressional act that established the national forests in the early part of this century, brought about a budgeted, balanced, integrated removal of timber from the public lands so as to ensure the continued high productivity of quality timber by those lands. "Balance," "budget," "stability of stand," "diversity" were not being taken into account by the early timber barons who reaped all they could and left behind devastated ecosystems that have been costly to rebuild—sometimes more costly to rebuild than observing ecologically oriented methods of logging would have been to practice.

2. The Taylor Grazing Act of 1934 formed the Grazing Service for the purpose of managing the public grazing lands in such a manner as to provide continued grazing productivity, so as to stabilize the livelihoods of stockmen. This economically ecological approach to grazing lands supplanted the exploitive methods that were leading to ultimate destruction of the resource. Now stockmen can harvest better animals while rebuilding and maintaining better range—but it was costly to have to rebuild.

These two examples epitomize Teddy Roosevelt's "wise use" in contrast to exploitation and consumption. They illustrate continuity of a resource, not its obliteration. But unfortunately man's activities in other ecosystems of our Nation still provide us with numerous examples of exploitation and consumption, rather than of wise use. Fortunately the Nation recently has become acutely aware that our once beautiful and bountiful country is deteriorating—rapidly.

Third, a stable population, balanced against our resources and the quality of environment, is imperative to survival of the American way of life—even to life itself. The fact is that there is an optimum number of organisms for the resources of any given site. Ecologists have long known this fact from studying the operation of animal and plant populations. It is the principle practiced by the Forest Service in its sustained yield forestry. It is the principle used in determining carrying capacity for grazing lands. When the optimum number is exceeded, resources are thrown out of balance and the economy of the ecosystem deteriorates. When this optimum is maintained, the processes inherent in the system continue at a high level of productivity and well-being.

The principle is clear but we have yet to come to grips with its application to us—as a society, or as a species.

The ecologist sees that we must curb the human population explosion—just as we seek to curb inflation. "Inflation of the population" makes each individual less valuable, less capable of action, more depressed, just as inflation of the dollar does these same things. As a Nation of "rugged individualists," we can hardly allow for that to happen to people. Inflation of population also makes the whole Nation run faster and faster in an effort to catch up—more roads, more houses, more cities, more electricity, et cetera—all of which dilutes our quality environment, depletes our resources faster, postpones our investment of time, talent, money in items of culture—education, music, art.

Our national theme really should be "better and better," rather than "more and more." "Better and better" would be reflected in a large gross national product from higher quality rather than quantity. We see this operate now in agriculture, where a peach tree can either be managed so it bears hundreds of small, barely edible, or salable fruits, or dozens of large, juicy, delectable fruits that are easily sold at relatively high prices.

Were we to focus on a "quality life" as a Nation, many significant changes would be wrought. We could gradually eliminate poverty, crime, delinquency, segregation, as well as solve our environmental problems. But when we concentrate on quantity, it leaves little time, energy, or money to develop quality.

Population stabilization would do much to assist in all environmental problems. Instead of planning sewerage treatment plants on an ever-expanding scale, we could plan for a given number and work for their greater and greater efficiency of treatment so as to release cleaner and cleaner water. Instead of planning more and more roads, we could develop those we have to their best advantage, leaving landscape and cities free of the goliathan that now strangles so many. Instead of the demand for a new city every month, we could do a better job of rebuilding the ones we have with a better, more livable design. Instead of seeking more and more minerals, we could concentrate on learning how to recycle the ones we have already extracted.

We can learn a great lesson by observing a stable ecosystem in its economics. It is a dynamic system, with continuous flow of energy and materials into and out of it. There is turnover of individuals, but there is an equilibrium established where there are no great excessive nor deficiences. All fits; all works together as a unit. With a stabilized human population at a level scientifically determined as optimum for our natural resources, our society could enjoy this same high level dynamic equilibrium for centuries. If we do not, the outlook is bleak indeed.

In regard to population stabilization, it is often said that there is no use controlling U.S. population when the people in other countries are reproducing at a faster rate. Several facts bear directly on this: (*a*) Each person in the United States uses six times as much of the world's resources than persons outside the U.S.A.—thus our population stabilization would tend to bring us into better balance with the world's resources; (*b*) stabilizing our own population would speed the rate at which we could solve our myriad environmental problems, and (*c*) our demonstration that we want to and can do come into balance with resources, for our own national good, will speak for itself to our neighbors.

ACTION PROPOSALS

(*a*) The most important single program the Thorne Ecological Foundation can envision for the environmental decade is formation of a National Center for Ecological Action. This organization would have several interrelated functions:

1. To make an ecological survey (an environmental resources inventory) of the Nation and determine the present state of ecological "health" of all the ecosystems. This survey would be conducted in a series of phases and would utilize the latest in data storage and retrieval;

2. To institute research programs on those facets of the Nation's ecosystems where present information is inadequate for determining a course of action;

3. To act as a clearinghouse for information on all types of "environmental concern" programs, their data and techniques encourage the private sector to accomplish as much as it can as rapidly as it can;

4. To provide "environmental quality control" teams for consulting with Federal agencies, local and State governments, private citizens on what is needed on specific environmental issues. These teams would have expertise in basic ecology, hydrology, climatelogy, computer programing, systems analysis, group dynamics, environmental design, and engineering;

5. To determine criteria for national, regional, and local "carrying capacities," closely coordinated with the environmental inventory and with local and regional needs, resources, and individuality;

6. To establish a "blue-ribbon" commission for reviewing all Government projects affecting the environment so that coordination of activities and results in all sectors could be assured. (This could coordinate and complement the Council on Environmental Quality.)

7. To develop stewardship programs in regards to all lands, private and public. This is a long-term goal, but could be pushed on public lands to greater extent than now exists. Government agency attitudes are still somewhat exploitive.

8. To have an international branch to monitor effects of our national activities on world ecosystems.

(*b*) We believe that special congressional commissions assigned to accomplish specific tasks in regard to environmental problems are effective. They can:

1. Mobilize expertise from all sectors of the Nation;

2. Give private citizens a variety of opportunities for input through holding open forums, conferences, think sessions, sending questionnaires, etc.;

3. Analyze information and ideas on specific topics and make recommendations from the vantage point of indepth efforts by team approaches.

(*c*) Our third suggestion would be for the Congress to pass a general resolution of mandate to the various project agencies to undertake immediately reviews of their policies and procedures in regard to environmental quality and to update these policies and procedures in such a way as to incorporate the most up-to-date ecological and systems analysis information at the earliest possible planning and action stages. Include the halting plans for new projects until they are reviewed from this standpoint. Have them modify projects in progress to conform as well as possible to this mandate. Provide necessary funding for this review and updating.

Explanation: It appears from various recent situations highlighted by conservationists that some of the greatest threats of national environmental quality come from the project agencies. It seems that they often justify operations by questionably arrived-at cost-benefit ratios that seldom consider the more intangible benefits of environmental quality, social costs from loss quality, etc. Their powers to act in a juggernaut fashion have been far better elucidated by numerous authors than I can here in the few moments available to me.

We at Thorne recognize and sympathize with the human qualities that lead to empire building and the necessity to justify the empire, once built. We have compassion for the innocent whose jobs may change or vanish. But we do not agree with maintaining a goliathan beyond its period of usefulness by allowing it to be self-perpetuating, any more than we would have believed in to maintaining the carriage business in the face of the automobile industry.

(d) A third idea is to pass a similar resolution to the land management agencies, so as to facilitate their efforts to update personnel and management techniques.

(e) We would like to see the national leaders take some positive, tactful, effective leadership toward population stabilization. Since this stabilization is central to the solution of most other environmental problems, it needs the best efforts of the Nation's leadership, as well as their immediate attention. One approach is from the standpoint of the enlightened self-interest to the individual, his community, nation, and world.

One small starting point might be to remove the premiums allowed families for childbearing, by limiting to two the number of income tax deductions a couple could claim. This could encourage those who are now in their prime childbearing years to limit their families. Making this retroactive to families now here would be unfair and very controversial. Something along this line for welfare allotments would help too.

(f) We are convinced that environmental arbitration boards, review systems, environmental courts of appeal, etc., could be enormous assistance in giving citizens opportunity for review and redress on environmental issues. They could be more immediate, incisive, effective, and less expensive than class-action litigation.

Class-action litigation would seem to be the last resort, when all else fails: First, it is not well understood in its functioning by the average citizen; second. it is enormously expensive for the citizen, thus excluding many people and most situations from its use. Only when enough people get mad enough, and pool their resources in spite of it all, is class-action litigation usually undertaken. True, organizations like the Environmental Defense Fund are teaching us that there is more money and public pressure available than we once would have expected. But citizens cannot afford this kind of action in adequate amounts to be effective in the number of cases requiring it. I speak with the experience of close observation of three such actions in Colorado in the last 7 months, the expenses of which have not nearly been met, despite sizable personal contribution of time, effort, and money.

(g) We see very little in proposed or existing legislation that is really encouraging industry to get busy and solve environmental problems on a voluntary basis. It is very significant to me that when Sputnik soared into space in the fall of 1957, the Nation suddenly got 100 percent motivated and solved technical, administrative, and funding problems to meet that challenge. The same thing was true in 1941, when Pearl Harbor exploded in our face. But why should the Nation need to be pushed against the wall to use its God-given intelligence and resources to solve the environmental problems before some facet of the many-dimensional environmental issue erupts, to its detriment and perhaps extinction?

Basically, we need three things: (a) recognition that there is a massive environmental problem that requires ecologically sensitive solutions; (b) courageous leadership to action, that cuts across party lines, redtape, government versus the private sector, the "generation gap"; (c) incisive, rapid authorization of a broad spectrum of ecologically oriented programs, only a few of which have I mentioned here.

Again, I thank the Subcommittee on Conservation and Natural Resources and Chairman Reuss for this opportunity. Volumes could be written on the subject of these hearings. I hope we have at least given a few useful ideas.

Mr. Reuss. Thank you very much, Dr. Willard.

Mr. Poole, I understand you have a later engagement. I wonder if it would be agreeable with the other panelists if we asked Mr. Poole to present his paper and then submit himself to questioning before we go on with the questioning of the others? If there is no objection, we will do that. You may proceed, Mr. Poole.

STATEMENT OF DANIEL A. POOLE, PRESIDENT, WILDLIFE MANAGEMENT INSTITUTE

Mr. Poole. Thank you, Mr. Chairman. I could stay later and be questioned with the group as a whole. But I want some freedom to leave after the statements.

I am Daniel A. Poole, president of the Wildlife Management Institute, with headquarters in Washington, D.C. The institute is one of the older national conservation organizations, and its program has been devoted to the restoration and improved management of natural resources in the public interest for more than 50 years.

It is a pleasure to participate in these important hearings. Unlike some subjects that come before Congress on which public opinion is divided, few question the necessity for the initiation and expansion of programs to counteract the progressive deterioration of the environment. There doubtlessly will be differing views on the kinds of programs that appear advisable and the problems deserving priority consideration. And if past experience is any guide, the danger is that we will not think as imaginatively nor act as boldly as the situation warrants.

In these brief remarks, I am not going to attempt to list or discuss the evidence of environmental degradation. The contributing factors and their effects are well documented.

In my view, Mr. Chairman, the action program that requires priority attention in the 1970's is that which deals with population regulation. The most severe threat to the quality of the environment, on both a national and a global scale, are the ugly consequences of continuing population expansion.

Uppermost in the mind of every person concerned about the environment should be the realization that all the degrading forces arise directly from people. The destruction of open space, the pollution of water and air, the unending congestion of more and more highways, the noisy and fumeladen airports and their travel lanes, the application of pesticides—everything of this kind—are done because of the necessity to feed, clothe, house, transport, and otherwise service and accommodate people. The greater the number of people, the greater the demands against the land for its resources and for living space.

Evidence at hand suggests that these demands already may be upsetting some of the complex and fundamental processes, like the oxygen cycle, that make life possible on earth. The sheer magnitude of the population problem, viewed only from the standpoint of demands against the environment, shows clearly that we do not have the resources to assure any reasonable kind of a standard of living in future years for hundreds of millions more people. Neither do we have the capability to construct and operate the systems necessary to receive their wastes and render them harmless to the environment. The only real hope of dealing with this serious problem is to treat it at its source—to take all the actions available to institute and implement a national policy of population regulation.

The basis for such a program, here in the U.S. and elsewhere, is contained in the President's message to Congress on population, dated last July 18. It contains many recommendations for action. I hope no time is wasted in granting the necessary authorities and in funding the programs that are suggested. New technology can help, of course, but there is no assurance that it is equal to the problems arising from having too many people.

I think, too, we have to speak with frankness on this issue as difficult as it may be at times. For example, I heard the other evening that in New York City during 1969, unwed school girls in grades 7 through 12 gave birth to 2,480 babies. I doubt that any kind of "family planning" could have helped those girls. In time, education would be helpful if it is practical enough to put the biology of human reproduction right on the line. As a father, I know that girls are well aware of where babies come from long before most boys. While education can provide accurate information and improved understanding, there is no avoiding the fact that more girls and boys need to know what can be done to avoid pregnancy.

I have heard it said that there are probably one million unwanted babies born in the United States annually. If that is true, and knowing what we do about the cause and effect relationship between excessive population and environmental degradation, then I urge programs to assist in the voluntary termination of unwanted pregnancies. Birth should be the result of wanting to have children, but even here there should be rethinking on family size. Birth should not be the penalty of being human. And society should not be asked to continue to shoulder this burden.

Legalized abortion is only one small way, but a positive one, of making inroads on the population problem. Other more sophisticated ways include voluntary sterilization, education, research, family planning, and all the rest. Because of the time it will take for even the most comprehensive program to begin to regulate population growth, and because of the absolute and urgent necessity for such a program, I urge that it be given priority status as the No. 1 national action program for the protection and improvement of the environment.

A program of next importance would be the installation of environmental instruction in America's education system. Every young person and, I should add, most of the adults, should be made aware that his life and the well-being of his family, community, State, and Nation depend on the capacity of his environment to sustain him and the society of which he is a part. As the young person matures and begins to participate in society, he has to be sensitive to environmental relationships so he can help make judgments about road and industrial locations, pollution treatment plant construction, and all the other factors that influence the community in which he lives. Everywhere I go today people express concern about the environment. They want something done, but they have few ideas about what can be done. They voice skepticism about the willingness and ability of government to do anything about it. They do not understand that they can do much about their environment if they would only speak out.

A third action program of great urgency involves a national land policy. A beginning has been made with the introduction of a bill in the Senate several days ago. It seeks to inspire the States to think about and plan how land should be used. It seeks to overcome the present chaotic process that permits the random spread of industry, housing, and all the rest. We need a national land ethic and a workable system. We need a new look at our philosophy that favors private gain at public expense. Despite what the Chamber of Commerce may claim, new industry brings more than jobs and payrolls. It also brings more suburbs, automobiles, crowded roads, and higher taxes for schools, highways, police and fire protection, and all the rest.

With proper education and with a responsive national land policy program we can hope to begin to move in the direction of providing man with an adequate environment in his own community. And I think that is most important. We must learn to think of environment in terms of the community. Much of our present program for parks and wilderness is based on the preservation of a few acres of land here and there, mostly remote from the human who would use them. We are operating on an oasis syndrome, thinking somehow that man's need and desire for nature can be satisfied by a few scattered and distant holdings. There is a desperate need to focus attention on all of the land between these parks, where people live and work and play. We need a good environment in every community.

The temptation is great to mention many specific problems, the more or less standard ones of air and water pollution abatement, solid waste disposal, transportation, power generation and transmission, pesticides, and all the rest. We need many new parks and nature reserves, particularly at the State and community level. You asked for brevity, Mr. Chairman, so I will not discuss them.

Finally, I want to express the conviction that neither the Federal Government nor State governments are organized and structured to do very much of anything about mounting a vigorous attack on the environmental problem. There has been frequent talk about reorganization of the executive department to create one agency responsible for natural resources and the environment. While some realignments may be beneficial, I am not sure that a massive reorganization would be desirable or sound.

I doubt very much that it would gain anything by way of broader and more effective programs, because the Congress is not equipped to provide the leadership and do the kind of job it should in this field. Time and time again in the years I have been here, I have seen one committee undo what another committee has just done. I have seen the committee responsible for highways accept programs that impair parks and wildlife refuges and ravage natural waterways. I have seen urgently necessary programs—water pollution control for example—made meaningless by the refusal of an administration to request the amount authorized or by the failure of a Congress to fund it. None of the committees with which I am familiar have sufficient staff. The staff men and their bosses have to rely largely on the information and evaluations supplied by the executive department and by cooperators. The division of responsibility between the committees leaves little opportunity for an assessment of how one program meshes with the environmental objectives of another.

There now is a recommendation for a Joint Commitee on the Environment to receive the report of the President's new Council on Environmental Quality. Certainly, that is needed. But it is only a small-step, stopgap approach. It mostly will be able to call attention, in time, to what we already know—and that is the organizational and procedural inadequacy of the Congress to fully enter the environmental field.

As a starter, I would recommend that the Joint Committee on the Environment be constituted of a ranking majority and minority member from most of the present standing committees, including from the Appropriations Committee. The joint committee could serve at the most, or perhaps I should say at the least, as a little red schoolhouse for some of these people.

Another basic change conservationists would like to see is an amendment of the present appropriations system so that programs tagged "purely environmental" would be funded automatically and fully at authorized levels. Using water pollution control as an example, the authorizations were arrived at after very careful and detailed examination of the problem and projected needs. Finally, as an unfortunate concession to political realities, the grants levels for sewage treatment plans were cut in half in the authorizing act. And then on top of that, the administration has not requested and the Congress has not provided anywhere near the authorizations, as inadequate as they are. It seems to me, Mr. Chairman, on programs of this kind that are closely related to human survival that this country can stand to make the investments that are so necessary for the maintenance and improvement of the environment. To do less is to surrender to the inevitable.

Mr. Reuss. Thank you, Mr. Poole. You make the point that, and I quote you, "* * * Congress is not equipped to provide the leadership and do the kind of job it should in this [the environmental] field." You mentioned that a Joint Committee on the Environment would be of some help. Many of us think that the present seniority system in Congress is the cause of some of Congress ineffectiveness and that if committee chairmen, for example, were selected by their party caucus, rather than by the rule of how long they had been on the committee; and if there were some provision for mandatory retirement, if not from Congress, at least from leadership positions at age 70, that Congress would be able to provide more leadership. Would you agree with that general proposition? And do you think it would apply in the environmental field as well?

Mr. Poole. I do agree with it. I realize that individuals vary, and that when one attempts to draw a mandatory age line, it may not apply equally. But I know of no better guide. In many of our activities this has been a barrier. We find that, while we are dealing with people who have responsible and influential status on committees, some are out of tune with what is going on in this country. Lord knows, I know I am out of tune enough myself and I am half the age of some of them. Every now and then when you get a man who is sympathetic, the seniority system then is very helpful. But in this field which is very complex, and very new, we do not have the overall understanding that I would hope for.

Mr. Reuss. Mr. Vander Jagt?

Mr. Vander Jagt. Thank you, Mr. Chairman.

Mr. Poole, you described, I thought in excellent terms, the problem of population control. Do the members of your organization actively support the goal of population control in this country?

Mr. Poole. Philosophically, yes.

Mr. Vander Jagt. Well——

Mr. Poole. See, we are essentially biological people. I mean our field is in biology. As Dr. Willard and some of the others said, we invoke biological considerations in the growing of crops and the raising of cattle and chickens and everything else, but somehow we seem to set man aside and not think of him as a biological entity.

Mr. Vander Jagt. But if this problem of population control is as important as you have so eloquently pointed out that it is, wouldn't you think it would deserve more than a philosophical support of your membership?

Mr. Poole. It deserves much more than that by everyone.

Mr. Vander Jagt. Do your members support it more than philosophically?

Mr. Poole. Yes; or I would not have said it here.

Mr. Vander Jagt. For example, an illustration you give was the liberalizing of abortion laws, so we avoid unwanted children. Many States are considering that now. There are many proposals to liberalize the laws in a number of States. Are your members actively supporting those legislators who are trying to liberalize the abortion legislation in the United States?

Mr. **Poole.** Directly, I have no knowledge of that.

Mr. **Vander Jagt.** You came up with what to me is a very intriguing suggestion—that if we can label a bill "purely environmental," why that bill would then be fully and automatically funded. Who would have the privilege of labeling that bill "purely environmental"?

Mr. **Poole.** Well, this is——

Mr. **Vander Jagt.** I have some bills I would like to do that with.

Mr. **Poole.** I realize that. And I realized when I wrote this that it would be open to question. This would take some judgment, it would take some new systems that we do not have now. I recall reading last summer, I believe in U.S. News & World Report, where Senator Jackson, who had given leadership in the Senate to this Environmental Quality Council, in an interview had said that this was the only immediate alternative in his mind to a complete and needed reorganization of Congress, Lord help us.

Mr. **Vander Jagt.** Do you think there is a reasonable possibility of getting this adopted by the Congress, with the support of the members of the Appropriations Committee?

Mr. **Poole.** I think in time we are going to see great changes in this direction. I think that the necessity for it is going to become more and more obvious.

Mr. **Vander Jagt.** Have you given any thought to the question—I am looking for enlightenment on it, I do not know the answer—as to whether or not Congress by this device could take away the executive's discretion as to whether or not the funds would be spent—a problem of which you spoke?

Mr. **Poole.** In our process, whereby the executive, on a good number of the large programs or authorizations, forwards them to the Hill, certainly they have done their homework and made their projections. You have to suppose, or I would suppose, the core part of it is pretty near correct. Then through the process of hearings and the interrogation of expert witnesses and so forth, the Congress reacts to it and builds its case on the situation involved. I think that after we go through that process, we should all accept the idea that what we have concluded by way of authorizations and costs and manpower and all of the rest is quite accurate, and we are safe to proceed. Following all this, I do not think we should have an administration pocketing the money after it is appropriated by a Congress that wants to provide it. Further, I do not believe we should accept an administration trying to make the books look good by budgeting only a part of the full authorization. I think at least in this area we should proceed on a different basis.

Mr. **Vander Jagt.** My question is: Have you given any thought as to whether, if this device of tagging a bill "purely environmental" were adopted by the Congress, we could kind of forget the Appropriations Committee? Have you given any thought as to whether, procedurally or constitutionally, we can then take away from the executive the discretion by putting that tag on as to whether or not the money would be spent?

Mr. **Poole.** I am now swimming beside you in deep water and it is way over my head. I am talking to the need rather than the technique.

Mr. **Vander Jagt.** I prefaced my question with the fact I also was in deep water.

One further question: You suggest a Joint House-Senate Committee on the Environment. I think I like your suggestion, I think it could be a fine little red schoolhouse for many members on the problems of the environment. But why do you prefer the idea and the approach of the joint committee, rather than a House Committee on the Environment and a Senate Committee on the Environment, which would take all jurisdiction on problems of environment unto themselves?

Mr. **Poole.** I think that initially it would provide for a better communion between the House and Senate on matters of this kind.

Mr. **Vander Jagt.** Heaven only knows how much the Senate and House need that.

Mr. **Poole.** Yes. So these people could perhaps return to each side a little more aware of the mutuality of the problem that they share.

Mr. **Vander Jagt.** Thank you.

Thank you, Mr. Chairman.

Mr. **Reuss.** Mr. Gude?

Mr. **Gude.** Thank you, Mr. Chairman.

I just would like to echo the sentiments of my colleagues who are concerned about the seniority system. I think we may be next to doing away with the seniority system. And perhaps by some adult education here in Congress, we can increase our knowledge and effectiveness in some of these areas.

Thank you very much.

Mr. **Reuss.** Thank you, Mr. Poole.

Mr. Brandborg?

STATEMENT OF STEWART BRANDBORG, EXECUTIVE DIRECTOR, THE WILDERNESS SOCIETY

Mr. **Brandborg.** Thank you, Mr. Chairman.

I am Stewart Brandborg, executive director of the Wilderness Society, a national conservation organization of some 60,000 members, with headquarters here in Washington, D.C.

I would like to present today a key element which I think will do the most in turning the tide of environmental degradation. I refer to effective cooperative endeavors involving Government at all levels, and organized citizens.

The Wilderness Society's concern for the preservation of wilderness makes urgently necessary our taking a hand in the task of Government-citizen cooperation elsewhere—in the cities where people are crowded and poisoned by foul air and water, in the suburbs where people are frightened and chained to their automobiles, in the rural areas where people are held to a marginal existence and fed a doctrine of progress through pavement that will eventually destroy them.

We have islands of wilderness in this country, but they cannot survive if the surrounding land is raped and devastated.

The Wildnerness Society now finds itself pretty completely immersed in the total spectrum of human needs in our complicated society.

The society has become deeply involved, perhaps on the advice of some of the members of this distinguished committee, in what we refer to commonly as the great grass roots effort. We see that the great depth and scope of the problems outlined here today by the panelists and the members of the committee are really not going to be probed in any meaningful way unless we get active involvement on the part of the citizenry.

The Wildnerness Society is committed to the idea of population control. We are committed to comprehensive land and water planning. We are committed to wise use of resources. We associate ourselves with the comments and observations that have been offered here today by the panel.

But we are getting a little disturbed, as we know the members of this committee are, by the great oratory that we witness all around us, the handwringing exercises and the overly complete job that is being done in documenting the scope of these serious environmental problems.

This certainly is a day when the word "conservation," the word "ecology," the word "environment"—all of these things are coming to the fore. I think we must get down to some brass tacks here and I think these brass tacks are very dear to the hearts of the members of this committee, because each member of this committee in one way or another is politically motivated. He would not be here were that not so. And I think most people who sincerely wish to serve the public interest within the body politic desire to bring from the citizenry the good dictates that will give us meaningful land and water use.

We must recognize initially that our society suffers from too many technicians. In my instance, I represent 7½ years of academic training in ecology, and wildlife management, training that in the academic years left me with little knowledge of some of the human relations, education, and sensitivity skills that are so close and so central to what is happening in our society today.

I think we must ask ourselves this central question: How do we, as working citizen conservationists, join with the concerned members of the Congress and with those at all levels of government in saying how we are going to meet this environmental opportunity?

How do we get down to the basic specifics? It has been pointed out by my colleagues here that we have a false value system. It seems to me with their beautifully phrased expressions they have kicked over some pretty big paper dragons here. Some of them have a lot more than paper inside.

We challenge the belief that because an operation is profitable, we can continue to allow it to be carried out. If we pollute streams, if we destroy wilderness, if we destroy the air we breathe, because it is profitable, and if profit can be regarded as the sacred cow, we might as well give up in our quest for good sound programs that will protect the quality of the environment.

In a similar way we must recognize that, as citizens and as people who have grown very fat and very comfortable, we are going to have to give up some of the things that have been sold to us. We are not always going to be able to maintain expensive homes with thick carpeting, we are not going to be able to have three color TV sets or two or three automobiles.

Some of these changes are central to the approach we must take. This all goes back to the value system of the American people. The quality of our environment must be given primary consideration. We are going to, of necessity, focus on the need to make some choices, each one of us, all of us in this country.

Now in working for the rounding out of the national wilderness preservation system, in working for sound land and water programs pretty much across the board, the Wilderness Society senses, as you do, through its mail, through the phone calls, through the visitations of the media representatives, the national magazines, the network radio TV programs, all of the rest, that the people in this country are ready to move. And I think they are ready to move at a time when some of us have lost sight of the real opportunities that we have in this system of ours, a democratic system, where the exercise of our democratic prerogatives gives us the way to proceed constructively to influence the decisions that are made, the decisions that are central to the preservation of environment.

And the Wilderness Society, in an effort to meet this central need has put itself into the role, in cooperation with most citizen groups that work at State and regional and local levels, of catalyzing human involvement, getting people started with some of the specific answers that must be hammered out at the local level.

We find that people generally have pretty much given up. While they are terribly worried about what is happening to the environment, they do not know how to proceed within the city councils, within the agencies of State and Federal Government, within the Congress of the United States, to give direction to our conservation policies and programs.

They have come to believe that between the bureaucracy of Federal, State, and local agencies, and the bureaucracies of private organizations—many of us suffer as much as any of the bureaucracies—there is too much red tape, they can't get through to the real work, and the meaningful programs that should proceed are blocked by the inertia of those who are deeply layered in these organizations and agencies.

So we have tried to work with a broad spectrum of conservation organizations, all those that can participate and come to the party—in effect, with any one who cares about environment—in training programs designed to show people how to become involved; how to get effectively into local issues, not by immediately focusing on something that is going to be resolved at the national level by the Congress or the executive branch but by working on projects that are right in their own back yard.

The polluted stream, the desecrated city park, the destruction of a beautiful woodland area, the loss of fishing, the loss of clear sky—all of these things are of immediate concern to local people. These are the types of problems that we must use as a basis for this teaching and training technique.

Central to this technique is the fact that we do not present ourselves on the scene as people from a long way off—Washington, D.C., or the State office—who have all of the answers; that we offer ourselves as catalytic agents who can show local people how to form working circles; working circles that bring together all of the diverse groups at the community and State levels who have a concern about what is happening to the environment. It is important, that these people develop ad hoc working circles in environmental councils—we don't care too much what they use as a mechanism for a committee framework—

that enable them to break environmental problems into their component parts. They must draw together the good input from those within the academic institutions, the research institutions, the Federal, State, and local agencies, bringing this input to the point where it can be focused on; where we can use it to develop the answers to critical issues and problems.

These working committees must be organized into subgroups that are realistic in meeting the morass of built-in resistance that we have at all levels of government, and also in private organizations. They must serve in showing people how to become involved in presenting resource issues to the public through educational means, the use of the schools, the full employment of the publicity media.

Finally, the big and very important job of reaching you and the others who make decisions as to which policies will be followed and which programs will be implemented. This is where we get the payload from public involvement. Now we are able to see, as in many recent instances, how the people will respond to environmental issues. If they can be informed as to the alternatives, if we can somehow get the word out to the people over this Nation that something is about to happen in the Congress that is inimical to the public good and to our broad resource programs, they will respond. This has been demonstrated.

I think both our obligation and the greatest need now are to go to the State and local levels where we can bring the fine leadership that we have within our research institutions, academic groups, and existing resource agencies, actively into the training of citizen leaders so that citizen groups will have a sound basis from which to launch their programs and to carry forward with the very practical aspects of making these resource and environmental programs known to the public at large.

The person in a politically sensitive post, as you know well, must respond to the people at the grassroots. I think we want to make that a conditioned response, where the people at the head of Government can respond with a confidence that people at both the local and State levels have the right answers, based on the sound feet-on-the-ground procedures—procedures which are well known to us, but that certainly are not practiced.

Now the Department of Interior, like all great institutions of our Federal Government, has been feeling its way, and, of course, the Wilderness Society, along with the organizations here on the panel, works very closely with this Department and its many agencies. It has had a distinguished history. But suddenly we find it, too, is groping for quick answers. How does it approach this environmental decade that has been kicked off so magnificently by this committee?

In this period of great disorder and high oratory in conservation, the Secretary of the Interior and his staff have come up with something. It is referred to as "the environmental imperative in the decade of the seventies."

This comes not only from the people at the head of the department and at the heads of agencies, but from the stalwarts beneath them, within the agencies, who have felt, as we all have, great disappointment as one fine conservation program after another has been projected without bringing the desired results. We have enacted great new authorizing laws, we have cleared appropriations, we have done all kinds of things, but we have fallen sadly short in implementing these new starts.

This Interior Department program seeks, through a very broad effort, and I believe a very sound approach, to give us a three-pointed attack. One that strikes at the immediate needs—the brush fires in conservation. These crisis issues would be exploited by bringing together an interagency team of experts that would be available to the local citizenry—not only to the citizen organizations here in Washington, but to citizen workers at the local level, in situations where experts—the people who have resource information—can come in and say: "Here are the fundamentals that you must have in approaching an air or water pollution problem, a critical land-use issue, or a question of determining balances between people numbers and what we can support on our lands."

This would open a great new door for resource people, many of whom have given up within the agencies because of their frustration in not finding forward movement in working with citizen groups from within their own agencies and departments. The program would bring about a concerted effort in cooperation with other departments, hopefully—this should be emphasized—because we have good resource people in other departments. I assume also that we would include people within State and local agencies and research institutions—this would bring about a quick approach to the second type of problem: The stopping of destructive practices through both legislative mechanisms and proper planning procedures.

In the long range, the Interior Department program focuses very clearly on educational needs, bringing environmental tools into the heart of the city where we now find 70 percent of our people concentrated. It would bring the living laboratory closer to people in the cities whether in a city park, an acreage of wild land here on the Potomac River, or in one of the great monument areas that we have here in the Capital. Last summer we had a small sample of this in the Bolivar Pool, where we had marsh ecology, a partially complete representation of the flora and fauna for students to study. This, of course, is the long-range investment in people that will pay great dividends. It has been focused upon by others on the panel.

I personally believe that our need first is to activate the leadership that lies latent, largely, at the citizen level, from teen-agers on through to older people, of whom many have fought long and valiantly for conservation, and who still have plenty of youth in their thinking, but are chronologically old, tired, and certainly very worn from their involvement in conservation issues.

I think that this committee should, with the good foundation that it has given us, proceed to explore the Department of the Interior's program. While it is often my duty to be constructively critical of the Department of the Interior and its agencies, I for one think this environmental education program warrants your full and careful consideration and your close study, to see how it can be interwoven into the approaches that I think will grow out of your committee's deliberations.

There is one area that cannot be overlooked. I made reference to the fact that we are professionals and that we suffer too much from our own technology—our own specializations. I think this is reflected here on the panel today. It must have been reflected dozens of times in the course of these deliberations over the past days.

Very few of the people that you have called forward to my knowledge, Mr. Chairman, have been from those areas of social and human development disciplines that will give us know-how for catalyzing people. If there is one great failure within the conservation movement today, it is that we do not know how to effectively use our human resource—the volunteers.

Right today, to my knowledge, we have not really harnessed the great initiative, the great imagination that we have in young people at the academic level in the colleges and universities of the country.

We must know how to put people to work, to develop people, and to get over the one-man bandmanship that so well characterizes the citizen conservation movement at all levels.

The need is for us to show people how to develop other people in these essential leadership roles. A psychologist recently addressed himself to me after I made a presentation in Georgia. He said if the conservation movement is to have any lasting effect on our history, we must get into this whole area of sensitivity training, development of local leaders, who can bring good conservation programs to the top by involving other people, by guiding and training them, by stimulating them and defining their roles.

I would say today you are looking down upon a collection of people who are essentially one-man band artists. You also must now seek to get down with us to people at local and State levels who can look at other people within this whole spectrum of opportunities, with one prime goal, and that is training other people—be effective citizens in our democracy.

I said earlier I thought we should go to the local level and pick the simple issues with which to train people in meeting environmental issues. I still stand by this, because people understand something best that is in their own backyards. We should use backyard issues to start people. From that training, if we go about it in the proper way, we will develop a corps of very broad gage individuals who ultimately will relate their own backyard experiences to the great problems that we face across the board in our society, those about which we are so concerned here today.

I think that we have had plenty of documentation—and too many symposia—in which the intellectually elite gather together, bathe in their own erudition, and generously document the case of the environmental degradation to show that the world is going to hell. We are now ready to get down to the grassroots with meaningful programs that show people how to become responsibly involved.

Mr. Reuss. Thank you very much, Mr. Brandborg. Mr. Brower, I have a question. You say 6 percent of the world's population in the United States is using 60 percent of the world's resources. In the United States itself you say 1 percent of the population is using 60 percent of U.S. resources.

I understand the first statement about the U.S. population using 60 percent of the world's resources, but I am a little surprised at the suggestion that 1 percent of the U.S. population is using 60 percent of the U.S. resources.

Mr. **Brower**. This is a very approximate figure. The figures are not so important as the general scope.

Six percent of the population uses 60 percent—that is in itself a great simplification. That 60 percent is an overall average of all kinds of things that really do not mix very well.

The 1 percent using 60 percent is even a rougher approximation. It varies so much.

For example, Paul Ehrlich uses the figure that, in the United States, one baby born to an affluent white American will use 50 times as many resources as the baby born in the black ghetto, and 300 times the resources of a baby born in Colombia. These figures are so wide-ranging, I think it would not be profitable to try to make precise.

But I am talking about the order of magnitude of the difference in the U.S. assault on resources, affluent white Americans in particular, with respect to the rest of the world. It is a greatly outsized ratio.

Mr. **Reuss**. Thank you. Dr. Kneese, I have a question on your observations on effluent charges as a means of making industrial water polluters not only pay for their pollution, but also to have an incentive to bring their pollution under control.

Effluent charges make sense for industrial polluters. However, you do need, do you not, a program like our present Federal Water Pollution Control Administration program of grants to municipalities for handling municipal and household wastes? It is proper, is it not, to—so to speak—socialize the charges of disposition of human waste, because that is a pretty general problem?

Dr. **Kneese**. Yes; let me comment on that. I think it is very important for the charges to be levied on the municipalities as well.

There are two main reasons: One is that it is not only a question of building a treatment plant for a municipality; there is also a question of how adequately it is operated.

I myself have seen secondary treatment plants that have produced no treatment effect for 6 weeks at a stretch.

The second question is how adequate its design is; its capacity; its capability with respect to the loads put on it.

The plant is basically a set of tanks. If you overload it, the result is to flow the stuff through faster and produce very low treatment effect.

The second and main reason, however, is that there are many industries connected to municipal treatment plants and these industries would not have the proper incentive to reduce their generation of waste waters unless the social cost of using the common property resources were transferred back to them in some manner.

I do appreciate that there is a serious problem of financing at the local level. I am not sure that I could give you a very good program for dealing with that.

One possibility would be to take half of the proceeds of the effluent charges and redistribute them back to the municipalities on the basis of their population—not linked to the construction of treatment plants at all, but simply on the basis of population.

This would produce some redistribution of income from the industrial sector to the municipal sector because roughly two-thirds of the proceeds of the charges would come from industrial sources, even if the charges were levied also on the municipalities. And it would also have the desirable incentive effect of being most beneficial to that municipality which is doing a good job of treatment because it would share in the pot in proportion to the population but pay only for the residual it discharges into the river.

I might take this opportunity to tell a little more about why I am so concerned with the question of incentives:

It seems to me that those of us who are very concerned about environmental questions might on occasion forget other values which are extremely important, too. The value, for example, of the democratic system of decisionmaking, the value of individual freedom, decentralization of the system, and so on.

I have one of my favorite quotations from de Tocqueville who, of course, was full of them. He said, "If you do not succeed in connecting the notion of right with that of personal interest, which is the only immutable point in the human heart, what means will you have of governing the world except by fear."

I think that is the central question for democracy today—to govern this modern world where common property resources are so important, where conflicts are great, to govern it by other means than fear. That is why I think the question of strong consideration of incentives is extremely important.

Mr. **Reuss.** Well, de Tocqueville and Adam Smith and others, the automatic regulatory people, have a point. But if I understand you right, you are going to tax industrial polluters, via an effluent charge, not only for the pollutional harm they cause by their industrial discharges, but enough in addition to help pay for a treatment plant to take care of household wastes. And that seems to me to be unduly rough on the water-polluting industries.

What I am getting at is this: I am all for the effluent charge program. But why, in order to argue for that program, is it necessary to sweep Senator Muskie and the Federal Water Pollution Control Administration's construction grants progam for municipal waste treatment to one side? Do you not need both operating in concert?

Dr. **Kneese.** I would certainly agree with that. There are different means by which the proceeds could be distributed, or funds could be obtained, to support the municipalities. I would not want to be inflexible on that. I was merely mentioning one which might be of considerable merit in the present situation, because of the great difficulty of getting financing from the general tax system for the purpose of municipal treatment plant construction.

The point was made here that, repeatedly, funds have been authorized and then not appropriated and now if appropriated will probably not be spent because of budgetary reasons.

Mr. **Reuss.** Well, but are not those invalid budgetary reasons and should not we attack that evil head on? And get the Congress and the Bureau of the Budget and the administration to authorize and appropriate, and once appropriated, spend the funds needed for Federal grants to local governments for construction of sewage treatment plants?

Dr. **Kneese.** Yes; of course the funds have to come from somewhere. They could presumably come from general revenues of the Government, which means a certain distribution of the burden. Or they might come from the tax on industrial wastes, both of these have certain undesirable effects, as far as individuals are concerned, if those levels become too high.

Mr. REUSS. We have not even started, though, to tax the paper companies, the steel mills, the mining interests, and others for the cost of cleaning up their waste once they get it into the water.

It seems to me unrealistic to envisage taxing them not only that much, but enough more to pay for municipal waste treatment plants. I should think, in the short term at least, we ought to stick to general revenues and as much of them as possible. I gather you agree with that.

Dr. KNEESE. I would agree with your judgment on that; yes.

Mr. REUSS. Mr. Vander Jagt.

Mr. VANDER JAGT. Thank you, Mr. Chairman. I would like to thank all of the participants for their very helpful and thoughtful contributions to our consideration of this program.

Mr. Brower, in your almost poetic statement, among the goals you suggested we should move toward in bringing about equilibrium was a halt in the population growth. My question to you is: How?

Mr. BROWER. I think it needs to be by a combination of methods. First, the approach that Dan Poole was talking about, I think, is one of the most important. Mrs. Garrett Hardin describes it this way: "Man should be got out of the population control business and it should be left to woman. And no woman should ever be required to bear a child she doesn't wish to."

I think that would cut the number of births in the world by about one-third. That is a big start. The other voluntary approaches can be substantial in the reduction of population. Here again I am citing Garrett Hardin's material in the "Tragedy of the Commons," a paper reprinted in the "Environmental Handbook." He points out that in matters of population, conscience alone is not enough—that with respect to population, conscience breeds itself out of existence.

The parents who have so much conscience that they don't want children at all will have no children who have a conscience, whereas the opposite gives you lots of children without consciences.

So he calls for coercion, willingly accepted. We accept coercion every day in the things we do not do. We don't play basketball in this room, and we accept that. We accept speed limits. There is a limit we have to accept because of man's burden on the environment. And those who put an excessive burden on the environment must be coerced into paying for that excess load.

So the tax incentive would be helpful, working for us in two ways. One could reward the women who go through the childbearing period without having an excessive number of children; perhaps for every year without producing they would be paid by society for not producing and overburdening society's environment.

There is the opposite tack: Removing the exemption after, say, the first or second child and then scaling, you might say, penalties according to income, so that you cover the field in this way.

I can't cite the figures precisely, but I heard a friend of mine talk about the kinds of subsidies—and I think in due course perhaps Dr. Kneese can help on this—the family that has, say, six children is expecting from the childless couple. It amounts to a subsidy, from taxes, of something like $30,000 to $40,000 in his lifetime. If it is anything like that, there should be a little more attention called to this kind of subsidy which is required by the people who have more children than the environment can stand.

There is the further point that Garrett Hardin brought up. He said we should not put so much emphasis in our education about getting married and having children.

There should be suggestions that there are other things that can be fruitfully done. He says we don't mention often enough Uncle Harry, who is 45, unmarried, childless, and having a good time. There is Aunt Margaret, you might say—and I am not saying Margaret Mead here, but I think it is her suggestion—who feels that there are many important careers for women other than being tied to the kitchen stove and the diapers, that there are careers in politics, for example, for women.

I think it would not harm our governmental circles to have more women in government. This kind of new career for women in business and government, in the arts, can produce a different orientation.

Anything that is suggested for bringing the population under control will be uncomfortable, because it will cause us to change our ways; but the alternative is appalling. That is why I think we are going to do it; we can't stand the untenable future of a people-piled earth, an earth of wall-to-wall people. It is no good.

Because of that, and because more and more people are seeing that, I think they are at a point where they will be willing to accept this kind of coercion. I think it is now up to the people who have been doing the good work, the Paul Ehrlichs and others. All of these people now need to reach the point where they submit to you drafts of what they think is possible as an initial step for the Congress to take, for the State legislatures to take, and then start building support that will make that politically feasible for the people who will then carry the ball in the Congress and State legislatures.

Washington State has made a good move on repealing abortion laws. I don't have the latest news; I don't know whether that came out of the conference yet. But there is one State that has started, and I think ohers can follow. I think they will.

Mr. Vander Jagt. Thank you, Mr. Brower. I am glad you accept one bit of the advice you gave in your excellent answer, and that is to get the men temporarily out of the population business and get the women into it.

I am going to ask Dr. Willard if the members of her organization actively support population control, which you indicated in your statement was so very important.

Dr. Willard. We are not a membership organization, but those of us on the staff certainly do. We do all we can in various areas of activity at the grassroots level to develop understanding of the need for population stabilization. As biologists and ecologists we try to put our arguments on a scientific basis by showing people that population control is in their personal self-interest.

None of us is going to be very comfortable when we have wall-to-wall people.

Mr. Vander Jagt. Just last year the Congress raised the exemption we allow for each child for $600 to $750. Senator Gore proposed that it go up to $800. Was that action by the Congress a step that encourages a limitation on population, or was it a reward for having additional children?

Dr. **Willard.** It is a reward, unless you say how many children are going to be included.

Mr. **Vander Jagt.** Mr. Brower, how do you feel about that?

Mr. **Brower.** I feel it is a reward and there should be a tempering of that. There were so many things going on in the tax bill not everybody was able to follow them all.

Mr. **Vander Jagt.** Did any of your organizations do anything in opposition to that tax bill, and that particular feature of it which rewarded a family for having additional children?

Dr. **Willard.** We are all tax-exempt organizations except Mr. Brower's Friends of the Earth, and since you brought the subject up, I would like to state that a bill like this one basically smothers anything we can do in an educational, informational way, except by gilt-edged invitation from you people directly. Thus it is a pretty crippling thing.

We, all of us here, are really not working for ourselves; we are working for the good of all. Yet we can't really come up and say anything about legislation unless invited. But those who get the personal benefit by profit can be in your office everyday, 24 hours a day.

Mr. **Vander Jagt.** We are very glad that you were invited here, so that even though some of the things were a little after the fact, you did have the opportunity to make your statements.

Dr. **Willard.** So are we.

Mr. **Vander Jagt.** Dr. Kneese, I am intrigued by your effluent charge proposal. You said it was a mindless cliché to say that this was a license to pollute. So, let me give you an opportunity to address yourself to this mindless cliché.

As I understand it, if we charged—correct me if my interpretation of your thesis is wrong—if we charged the industry for the amount of effluents it poured back into the water, the cost would become so great that that industry would cease to exist or change its operations so it would cease to pollute. Is that a correct understanding of why it is a mindless cliché to say "a license to pollute"?

Dr. **Kneese.** Yes, it is.

Mr. **Vander Jagt.** Then my next question is: Wouldn't that process take a little bit of time? Some of our giants of industry could absorb considerable costs for a considerable period of time before they went under. And in the meantime they would be continuing to pollute. And do we have the time to wait for that process to take place? Or do we have to stop pollution a lot sooner than that?

Dr. **Kneese.** I think the evidence that exists is very compelling in favor of the proposition that it would go much faster than with our present procedures. For one thing it could immediately impact every industrial polluter in the country, without going through long processes of trying to bring enforcement actions against individual polluters. The latter cannot be regarded as a competent strategy for the character of the problem.

It is difficult, awkward, expensive. We have had a very bad record in being able to regulate industry. On the other hand, the incentive would be immediate.

Then there are a number of instances, particularly where municipalities have placed sewer surcharges on industries—that is, distinguished their wastes and placed a special surcharge on them—where the effect has been extremely rapid.

Senator Proxmire reported several of those in his testimony. There would be stages. There are many things that can be done in most industries to tighten up very quickly and very inexpensively. Then there are the more fundamental processes of gradually building this kind of a cost into the design of new equipment, and so forth.

But it is a systematic method; it would be broad in its impact. And I think one would see results quickly.

Mr. **Vander Jagt.** You compared the speed of your proposal and our present approach to it. It is possible there is an alternative approach that is even better, and even more simple? I think you mentioned in your testimony another approach, a recycling proposal, which we considered earlier this week—a spray irrigation approach.

The requirement of industry is that the water they put back in will have to be as pure or purer than the water they took out. Why wouldn't it be better to require them to put in the kind of system that will put the water back purer than they took it out? Wouldn't that make it much easier to determine whether or not there was compliance?

For example, in your testimony, you pointed out the difficulty of measuring the amount of effluents that each industry contributed. Who is going to put the price tag on? Are we going to have some political decision as to who bears what burden of the load?

Dr. **Kneese.** There is much more basis for it than that, in my opinion. First of all, I think I said that many industries do not know what they put into the rivers, which is not quite the same thing as saying it is difficult to find out. There are well developed tests that could be used for this. They have been used systematically and continuously, for example in the Ruhr area of Germany, for up to 50 years.

Mr. **Vander Jagt.** Isn't that where we have some of the most polluted waters in all of the world?

Dr. **Kneese.** You have some. But on the other hand, you have managed waters which are relatively good in an extremely highly developed area that places tremendous burdens on it.

The other point is that we are not in a position, at the present time, to close up most of the processes. In limited situations, you may be able to reduce the use of water courses for waste disposal to zero use—possibly. It is very difficult to see how you could possibly do that for each one of the environmental media.

I think it is extremely instructive to think in terms of a materials balance that has to be achieved in conjunction with the production and consumption activities and the environment.

Unless you are able to achieve, indeed, a full recycle of all of the materials and limit yourself to the use of solar energy, and in effect obtain conditions that are like those that we haven't yet obtained in a space ship, I might say, there must be some discharge of materials and energy to the environment.

What I am proposing is a systematic means of controlling that use of the environment—of managing the environment—so that other activities which require it and which benefit from it will not be damaged beyond tolerable points.

And I think this is the only realistic approach we can take at the present time. I very strongly feel that we are getting at some fundamental parts of the problem here. We are getting at the incentive effect, as far as reducing waste, redesigning processes, developing technology, which is another aspect that needs to be stressed.

We have hardly done anything in our history in terms of developing technologies for reducing the use of common property resources.

That is the reason they were polluted to such an extent. There were no values on them. Another aspect of this that should not be neglected in the proposal I put forward is that there are techniques other than the treatment of waste waters, or even the reduction of generation of waste in the industrial processes, for improving the quality of water.

These have been relatively well engineered and well worked out. For example, the low-water quality periods in streams tend to correspond to certain hydrologic and meteorologic conditions—low river flows occur in the late summer, for example, with hot temperatures.

This reduces the dissolved oxygen in the rivers. Higher temperatures mean organisms are more sensitive to toxic materials, et cetera.

One way of dealing with that situation is to regulate the low river flows to some extent, and that can sometimes be done at low cost.

Another is to introduce dissolved oxygen frequently into the rivers. This is one of the main kinds of parameters that are affected by waste discharges, and for very adverse periods it is possible to put it in mechanically.

There are other such devices one might think of. And this is, in a way, the main support for the regional approach which looks at the problem as a regional management problem, not simply as a problem of putting waste treatment plants on the ends of pipes wherever they happen to be.

Of course, in Senator Proxmire's bill he stressed this portion of it, too—the support that could be provided for the development of regional institutions.

Mr. **Vander Jagt.** In the end it is the individual who foots the bill though, isn't it? Either as the consumer paying higher prices for the product, or the taxpayers paying higher taxes to get the job done. It is the individual who pays.

Dr. **Kneese.** Yes. There is no way of escaping that, of course. In some fashion, the consumers finally pay.

Mr. **Vander Jagt.** Under the spray irrigation system which is being developed, and which I described to you, the water going back in is purer than when it came out—the nitrogen and phosphate is removed and put on the land. It is not a waste, it is disposed of as a natural resource which is enriching the environment.

In that case, under your charge system, would you reimburse them because they made the environment better?

Dr. **Kneese.** I would think that would be in order, yes.

Mr. **Reuss.** Mr. Gude?

Mr. **Gude.** Dr. Kneese, I am also very interested in this effluent charge idea. I think it has a great deal of merit. It would seem to me that if industry does not clean up the effluents and is willing to pay the charges, these charges could go toward the construction of plants to take care of the effluents.

Dr. Kneese. They could go toward the construction of plants or other devices to improve water quality.

Mr. Gude. Yes, such systems as Congressman Vander Jagt suggested.

With regard to industries producing products which are harmful to the environment, after they are disposed of by the user—for example in the case of household detergents—I wonder whether the cost of extracting a pound of phosphorus in a sewage plant could be determined and levied on the detergents at the point of manufacture, and could then go into a fund which could supplement a construction fund on the national level?

Dr. Kneese. Well, I think there are any number of such devices that are possible.

Mr. Gude. The effluent charge there would not reach the manufacturer in this case—it would go to the consumer. In this case the housewife would be the one that is disposing of it. If industry is going to benefit from the manufacture of detergents with phosphorus, I can see merit in that approach.

Dr. Keese. I think that might be quite meritorious.

Mr. Gude. The same plan could apply to the cost of solid waste disposal—plastics which will not rot, metals which won't rust. A figure for the cost of disposal could be determined and could be levied at the point of manufacture.

Dr. Kneese. I think that is again a possibility. I think we are in better condition, as far as the research base is concerned, for the waste water discharge program that I mentioned. But the principle is a general one, and that is that there ought to be some way of reflecting the cost of using the common property resources back onto those people who cause the cost.

I should think that it might be applied to the solid waste problem also and to some extent to air pollution problems, too, although this would require some additional study.

Mr. Gude. Thank you very much. Mr. Brandborg, I was very much inspired by your remarks. I know that the question I frequently hear when I talk with groups in my district or I read letters is that everyone is concerned about the environment. They want to know what they can do, and so much of their interest seems to dissolve into imploring Congress to bring about the revolution.

I think there is a great deal that can be done by organizations at the local and State level. For example, in my own district we have building codes—local building codes—which require that the grounds be covered with grass, or that measures be taken to carry off silt from the land. There is a good question whether the local government, from time to time, in the various jurisdictions, is properly enforcing such codes. This seems to me to be the type of concrete problem about which you remarked.

In another area, we have a national requirement about pollution devices on automobiles; and yet in the State of Maryland we have no inspection system except for used cars which requires the devices, such as they are—and they are certainly not adequate to the problem yet. The public is not getting the benefit of many of these devices on automobiles that are running around in the State of Maryland. An annual car inspection system would remedy this. Is this the type of concrete thing to which you addressed yourself?

Mr. BRANDBORG. Yes, Mr. Gude. I addressed myself to that type of concrete example as a means of introducing us as a conservation movement—those of us here in this room today—to a systems approach for involving people.

We cannot get the desired results in the specific examples you speak of unless we have good articulate people working at the grass roots.

As we in this room all know, most of the great things in this country often start with one or two individuals—a few people at most—and many are seen through to a successful culmination by the efforts of just a few people.

Now, there is a whole technology that will bring these needs into focus. People everywhere want to know how to help. How do we show them how they can become involved constructively, getting the contribution of new technology that has been brought out here today, to bring resource issues into focus locally.

Above all in importance is this thing that we have all touched on—and certainly those of us within organizations and within political bodies see its great potential—the need for directing and guiding the human being who has the potential for developing other human beings in leadership roles. I think the matters that you bring to our attention Mr. Gude, are the examples of things at the level on which people can really take hold, to gain competence through their own participation and involvement.

From that type of success they naturally escalate to some of the broader issues and ultimately, in a period of a relatively short time, we find their identification with the major policy issues relating to environment that we face here today. This is a training, human development process.

I have a great faith personally, and I think I speak for my organization, in the democratic processes of our country. Yes, we need to bring new leadership, enlightened leadership, to the fore. But we see that we are stopped many, many times if we don't have people working at local and State levels, who see the need for this leadership.

I think the perception of the need for this leadership comes through responsible involvement. I think it comes through building the fires in the people out there who are ready to go and who are begging that all of us develop a more systematic approach in developing leaders. Above all, this committee should ask the agencies of the Federal Government and State and local governments to throw their people into this human development process, using their special skills and technology, to give the guidelines from which sound programs can be developed.

We are having today a great enthusiatic push for the teach-ins, which are very wholesome. We are trying to bring environmental issues to the campuses. I am very disturbed by the possibility that after we pass the teach-in month of April there won't be clear follow-through guidelines for the specific jobs that must be done, that we won't be there with all of the technology, all of the human development processes which we should provide to help those people in the next stage of critically important followthrough.

We face this same need throughout our organizations today. Citizen groups everywhere are ready for this kind of advice, as are individuals.

Mr. Gude. Do you think we might address ourselves—both Congress and your groups—to the question of how the Federal dollar for education is being distributed as far as the social sciences are concerned?

Following Sputnik, of course, we made tremendous investment in the physical sciences. And now we need not only to develop leaders in the area we are concerned with, but also to invest in personnel in the area of criminal rehabilitation—counselors, community leaders, probation officers, people of this type.

Is our Federal dollar being channeled in the proper direction to meet these needs?

Mr. Brandborg. I think we must address ourselves to those basic questions which you pose. I believe we must face the need to change human behavior and that we can have all types of high-flown policies at national and State levels; but unless we change our educational institutions, unless we make the quality of the environment an important concern of the children in the schools, we ultimately face the saddest type of degredation.

I agree wholly with your approach, Mr. Gude.

Mr. Gude. Thank you, Mr. Chairman.

Mr. Reuss. I want to thank Mr. Brower, Dr. Kneese, Dr. Willard, and Mr. Brandborg for your very real contributions to our deliberations.

The Subcommittee on Conservation, having heard all of the witnesses on this phase of its study on action proposals for the environmental decade, will now stand adjourned.

(Whereupon, at 12 noon, the subcommittee was adjourned.)

THE ENVIRONMENTAL DECADE

(Action Proposals for the 1970's)

FRIDAY, MARCH 13, 1970

House of Representatives,
Conservation and Natural Resources Subcommittee
of the Committee on Government Operations,
Ann Arbor, Mich.

The subcommittee met at 9:30 a.m., in the ballroom of the Michigan Union, Hon. Henry S. Reuss (chairman of the subcommittee) presiding.

Subcommittee members present: Representatives Henry S. Reuss, Jim Wright, Guy Vander Jagt, and Paul N. McCloskey, Jr.

Other Members present: Representatives John D. Dingell and Marvin L. Esch.

[Note.—Mechanical difficulties precluded transcription of this hearing, which was tape recorded. This printed hearing, therefore, consists of Chairman Reuss' opening statement and the statements of the witnesses, with the exception of Mr. Matthew Andrea, representing the D.C. Student Committee on the Transportation Crisis, who did not submit a written statement.]

OPENING STATEMENT OF CONGRESSMAN HENRY S. REUSS, CHAIRMAN, CONSERVATION AND NATURAL RESOURCES SUBCOMMITTEE

Mr. Reuss. On December 5, 1969, the members of this subcommittee, together with a bipartisan group of 75 other Members of Congress, called for designation of the 1970's as the "Environmental Decade" and recommended a wide-ranging action program for cleaning up the environment during this decade.

During the first week of February this year, our subcommittee began a series of hearings on the Environmental Decade—action proposals of the 1970's—in Washington, D.C. We heard spokesmen for conservation organizations and other groups such as the American Institute of Architects, the League of Women Voters, and the American Public Health Association.

Today in Ann Arbor, as part of the "Environmental Teach-In" at the University of Michigan, our subcommittee resumes its hearings on action proposals for the Environmental Decade. We welcome the views of the youth of our Nation who are becoming so magnificently involved in the fight to save our environment. We shall also have another hearing for representatives of youth organizations in Washington, D.C., on April 3.

To respond adequately to the environmental crisis which confronts this country will require the contribution of all of America's citizens. The American people have become increasingly aware of the nature of this environmental crisis. Their response has been an anguished outcry against the destroyers of our land.

In order to proceed with the practical resolution of the complex scientific, economic, and political problems which we now recognize must be resolved, those of us in Government who are directly concerned with these problems need your zealous and thoughtful participation. We applaud such educational events as the "teach-in," here and at other universities and high schools throughout the country, as they propel forward responsible efforts to resolve the environmental crisis. We are glad that our subcommittee has this opportunity to hear from representatives of the youth at this "teach-in."

We hope, as we explore existing and imminent environmental problems, to discover what must be done to solve them; to examine the effectiveness and efficiency of existing governmental policies and programs; and to develop proposals for new programs where needed.

Among the questions we are interested in exploring are:

1. What must government do to strengthen or redirect its existing programs for environmental protection and improvement?
2. Which programs should be expanded, curtailed, or eliminated? How? Why?
3. How can programs at all levels of government be better coordinated to achieve maximum economy, efficiency, and effectiveness?
4. What would be the cost of new programs to protect and enhance the quality of the environment? Who should administer such programs?
5. How can we encourage more public participation in the consideration of proposals that affect the environment?
6. How can we make public agencies and officials more responsive to environmental concerns in the administration of environmental programs?
7. Can the public effectively protect our air and water through class action litigation?
8. How should the Federal grant programs be strengthened to help protect and improve environmental values?

Before calling our first witness, I would like to introduce to you the Members of Congress who are with us today.

First, Congressman Guy Vander Jagt of Michigan's 9th district, the ranking minority member on the Conservation Subcommittee, who has made a most valuable contribution to the subcommittee's deliberations, and who, I might add, has made its chairman's work considerably less burdensome.

Other subcommittee members who are here today are Congressman Jim Wright of Texas, and Congressman Paul N. McCloskey, Jr., of California.

Also with us are two members of the Michigan delegation. They are not members of the subcommittee, but we are very pleased to have them with us to participate in this hearing: Congressman John D. Dingell of Detroit, who has long been a leader in the conservation movement, and Congressman Marvin L. Esch, who represents your own city of Ann Arbor.

STATEMENT OF DENIS HAYES, NATIONAL COORDINATOR, ENVIRONMENTAL ACTION

Mr. HAYES. Mr. Chairman, I won't waste time this morning cataloging frightening statistics on what we are doing to our environment. You know and I know enough right now to draw one conclusion: We have to reverse our course, and we have to do it at once.

But so far the environmental crisis has inspired only piecemeal programs and insipid rhetoric. Most of the politicians and businessmen who are jumping on the environmental bandwagon don't have the slightest idea what they're getting into. They don't realize that we've entered a long and serious value conflict; a fight for a profound change in what this country is all about. They simply don't have a clue to what we mean by "saving the environment."

They are talking about emission control devices on automobiles; we are talking about bans on automobiles. They are bursting with pride over plans for inadequate municipal waste treatment plants; we are challenging the ethics of a society that, with only 7 percent of the world's population, accounts for more than half of the world's annual consumption of raw materials.

This country is robbing the rest of the contemporary world and all future generations of their natural inheritance. We have to stop.

This country consumes resources at an extravagant rate and gags on its own garbage. Pollution is only one symptom of the environmental crisis. We are spending insanely large sums on military hardware, such as the suicidal MIRV and ABM systems, instead of eliminating hunger and poverty. We squander resources on moondust while people live in wretched housing. And we still waste money and lives in a war we should never have entered and should get out of immediately. These are all a part of our basic disregard for how people live, and for the destruction of our surroundings.

We have made Vietnam an ecological catastrophe. Vietnam was once capable of producing a marketable surplus of grains and rice. Now America must feed her. We have left more than 500,000 acres barren. American bombs have pock marked the country with more than 2.5 million craters as much as 30 feet deep. We have destroyed much of the country's fertile mangrove forests, which sheltered protein-rich fish and shellfish; in their place grow sterile forests of bamboo.

The destruction of the environment of Vietnam is not simply a byproduct of the war. We are guilty of a direct, devastating, and inexcusable assault on that nation's ecosytsem. The United States spent $73 million on defoliation in Vietnam in the last fiscal year alone. Much of the money went for the purchase and distribution of agent orange, a powerful herbicide containing 2,4,5-T, which has been shown to produce birth defects in laboratory animals. We have dumped defoliants on Vietnam at the rate of 10,000 pounds a month, blackening in a single year 6,600 square miles.

We cannot pretend to be concerned with the environment of this or any other nation as long as w econtinue the war in Vietnam—or enter a similar war in Laos or elsewhere.

But even if the war were over tomorrow, America would still be killing this planet. Even the peaceful pursuits of this country are horrifying. Too often our political and business institutions seem oblivious to the fact that some of us want to live in this country 30 years from now. Those years are running out. We don't have much time. We cannot afford to give you much time.

Any day now a decision will be made on just one more outrageous activity. The Atomic Energy Commission wants to set off the largest nuclear cratering blast in history. If the Undersecretaries' Committee of the National Security Council approves, the STURTEVANT blast—170 kilotons, 8½ times as powerful as the Hiroshima bomb—will be detonated in Nevada this month or next. The test will not be fully contained underground. It is designed to produce a crater as an experiment in using bombs to build canals and harbors. It will send an estimated 17 million curies of radioactive gas and debris into the atmosphere. It would be utterly irresponsible to approve the test. Congress, however has already approved—and funded—STURTEVANT, and our only hope now lies with the National Security Council. Big hope!

There should be a full and impartial study of the environmental effects of this—and every other major governmental or industrial project that will affect the ecosystem of the country—before it is undertaken, not after it is too late. If we are to make wise decisions, we have to know what we are doing to our environment. The burden of proof must be placed on those whose activities will affect the environment—whether by blasting, building, or marketing products—to prove that what they propose is ecologically sound.

Some vested interests in this country will resist the idea that we must actively protect other nations and future generations, instead of present profits. But a movement is building that will not stand for more of the step-by-step, reckless decisions that dumped sewage in our air and water, got and kept us in Vietnam, and neglected to allow all people a worthwhile way of life. It is a movement that will challenge the personal values of every member of this society, the processes of corporate decisionmaking, and the political priorities of the United States.

The movement is beginning; it must succeed.

STATEMENT OF PIERRE PRADERVAND, CENTER FOR POPULATION PLANNING, THE UNIVERSITY OF MICHIGAN

PROBLEMS OF POPULATION CONTROL IN DEVELOPING COUNTRIES

Mr. PRADERVAND. My name is Pierre Pradervand. At the moment I am affiliated as a graduate student with the University of Michigan Center for Population Planning. Formerly, I have served as a research sociologist on family planning with the Ministry of Finance and Planning in Algeria, and as a consultant on population problems in West Africa for the Ford Foundation.

A recent film made in Bolivia and currently enjoying a tremendous success in that country depicts the murder of a Peace Corps volunteer who had been distributing pills left and right to Indians. Following strong complaints by the U.S. Embassy, the right-wing regime sends soldiers to punish the Indian population of the region where the crime was committed, but a last-minute popular uprising ousts the government in power.

The story discusses well the growing animosity among ever-wider sectors of the elite of developing countries to population control. In Africa, where we have been active in the past 4 years, elite attitudes are very different depending on whether the country is French-speaking or English-speaking. In English-speaking countries, private foundations have managed to convince the governments that population control was necessary--and possible. (This last statement being quite unwarranted by the facts.) In French-speaking countries, most governments are strongly opposed to population control and resent American intervention in this field, especially as quite a few are convinced they need larger populations, not smaller ones. This opinion was expressed strongly by President Boumedienne of Algeria, on June 19, 1969, in a statement mentioning that birth control was no solution to the problem of development. In another African capital, the President turned down an offer to start a family planning clinic with American funds because he was afraid that he would be "forced" into population control. Declarations such as that of the president of the World Bank, Mr. MacNamara, asking that aid be "tied" to the existence of population control, created widespread resentment—and most understandably so.

At a moment when the AID budget is cut drastically, funds allocated to population control, in the same budget, have skyrocketed in past years. It is difficult for developing countries not to feel that the West considers population control a cheap way out of the development dilemma—and the accusation is far from being unfounded. The AID philosophy contends that population growth is the main obstacle to development—a totally unproved fact contested by outstanding economists like S. Kergacks, H. Leisenskein, or C. Clark. Population growth is not the cause of underdevelopment but the symptom and consequence of underdevelopment and the colonial occupation.

"Population control" does not create a single job, does not build a single school, till a single acre, turn a single lathe. Although it is, in the long run, an indispensible part of any development policy, it can be a waste of meager resources in the initial stages of development. Crash food programs and the images of the so-called "green revolution" will never solve the food problem as long as basic land reforms have not been undertaken. India is a typical case: It diverts a huge amount of effort to a family planning program that, judged by its initial crisis, has failed, due in part to the pressure of the large landowners in Congress who evidently prefer upholding massive sterilization programs to land reforms.

We think that in most parts of Africa today, population control is absolutely unfeasible due to the world's highest death rates (in many rural areas, one child out of two dies before the age of 5), very high illiteracy rates (80–95 percent), little urbanization, bad communications, a quasi-inexistent health infrastructure, et cetera. In many regions, to be assured of having one surviving son in old age, a woman must have more than seven live births. To speak of birth control, in such conditions, is ludicrous to say the very least. Until basic structural reforms leading to a certain level of development and much lower mortality have been implemented, people will not even want to hear of birth control. Massive investments in agriculture, education and public health are necessary to bring death rates down and induce the basic economic changes which will end by changing peoples' attitude toward fertility. Currently, most tropical African women want around 6.5 children—two more than in most developing countries of Asia and Latin America. Not even the perfect contraceptive could alter this.

We do not expect basic changes in the now well-entrenched AID philosophy in the field of population control. Nevertheless, we would like to suggest that AID receive the authorization to spend funds—at present strictly tied to population control—on maternal and child health. Our experience has convinced us that expenditures in this field are the best way of preparing women for family planning.

STATEMENT OF GARRETT De BELL, WASHINGTON REPRESENTATIVE, ZERO POPULATION GROWTH, INC.

Mr. De Bell. I am Garrett De Bell, the Washington representative of Zero Population Growth, Inc. ZPG established its national hearquarters in California in September of 1969 and has now grown to 8,000 members in 65 chapters across the Nation. ZPG is actively working for stabilization of the population of the United States and is seeking solutions to the environmental problems that result in part from excessive population size. Since ZPG is not tax exempt, we are free to lobby for legislation that makes ecological sense, to support public officials whose policies make ecological sense and to work for the defeat of those who do not.

In a recent speech, President Nixon said: "For the most part, the damage done to our environment has not been * * * the inevitable byproduct either of advancing technology or of growing population." It is refreshing to find a statement as unambiguously wrong as this. It is now clear that our environment is rapidly deteriorating because of the increasing rate of pollution and resource depletion per person compounded by an exploding population. The environmental impact of the world's population is only partially avoidable. A certain amount of habitat destruction and environmental pollution is the inevitable consequence of meeting the basic needs of the people. Most of the world's people are now living at bare subsistence and are causing only the minimal amount of damage to their environment that is an unavoidable result of providing for their basic needs. It is becoming increasingly clear that the earth has reached or exceeded the optimum number of human beings that can be decently supported. Each year's additional millions further stress the capacity of the life-support system. Stabilizing the world's population (zero population growth) is the only solution. We urge that the United States immediately give all available resources and technical assistance to any country desiring help in limiting its population.

But the population problem is not just the problem of the underdeveloped countries. The citizens of the United States, a tiny minority of the world's population, are using up the world's resources and polluting the global environment at a rate many times that of any other population. The environmental impact of each person in the United States has increased dramatically as a result of the production, use, and disposal of the products that are produced by our technological society and that people have come to think of as necessities thanks to the all-too-successful manipulation by advertising. Solving the environmental crisis in this country will require two approaches. The amount of pollution per person will have to be strikingly reduced and the population will have to stabilize. If the population does not stop growing, all our gains will be temporary, only to be eaten up by the constantly increased numbers of people.

It must be made very clear that true solutions to our problems and creating a high quality of life in this country will not come about by using the band-aid approach. Antibillboard laws, litter laws, smog control devices, and more sewage treatment plants are desirable, but we should realize that we will only get a quality environment when we stop valuing production and consumption for its own sake and think of the effect of the production on the quality of our lives.

Some specific proposals may help to stimulate discussion:

1. In order to achieve a stable population, birth control services, voluntary sterilization, and abortion should all be available on demand and free to all who cannot afford them. Legal abortion should not be available only to the rich as is now the case in many States and the District of Columbia.

2. Tax incentives, financial benefits, insurance rates, and many other pressures in this society are pro-natalist. These should be changed to give the advantage to those who contribute least to population growth. One example here is Senator Packwood of Oregon's bill to cut off tax deductions for all children after the third and to reduce that for the third.

3. All Federal projects that cause environmental destruction for trivial benefits should be immediately stopped. A prime example here is the SST. The Federal Government is spending billions to subsidize Boeing to build this environmental insult. The reasons given are national prestige and balance of payments. There is no prestige to be gained by subjecting people to sonic booms so a few of the elite can travel a little faster. The balance of payments argument assumes that U.S. airlines will buy the British-French Concorde if the Boeing SST is not produced. I propose two things: First, that all Federal funds for the SST be withdrawn immediately; second, that the Congress pass a law forbidding the use of U.S. airspace and airports to any SST, domestic or foreign, and to pass any other laws necessary to make sure that no U.S. airline disturbs the peace of any of the world's people by flying the Concorde on any foreign routes.

4. Since the private automobile is the main cause of smog, a main cause of death in this country (55,000 people killed and 200,000 injured each year), and is dominating the countryside with freeways and other facilities, I propose: That the highway trust fund be immediately opened up for use in funding whatever means of transporta-

tion is best in a given locality whether it be subsidies for railroads, minibus systems, rapid transit, or bicycle paths. This will require, among other things, that the highway lobby be broken.

5. Irresponsible and unnecessary use of pesticides must stop. Some pesticides are necessary for vital public health purposes and for stable food production. But these reasons are used by the chemical interests to justify chemical use far in excess of what is needed for vital purposes. All use of pesticides on ornamental crops, surplus crops, and nonessential crops should be prohibited. A certain amount of spraying may be needed to produce wheat, but that does not justify use of DDT on cotton which is a surplus commodity. Public pressure manipulated by advertising has created a demand for insect-free crops, particularly fruits and vegetables. We must create a demand for clean food with no poisons and a few insects as a symbol of purity. Federal standards that consider insect parts as evidence of filth should be repealed. The present trend to commercial farms with single crops should be reversed by providing subsidies to encourage more small farms with very diverse crops as the easiest way to prevent insect outbreaks. Funds for biological control research should be greatly increased. Perhaps the budget for the SST could be split between contraceptive research and biocontrol research.

6. To solve the solid waste problem, recycling of materials should become the rule rather than the exception. We propose that the cost of disposal of each product be included in the price as a tax and the tax be used to subsidize the recycling or ultimate disposal of the product. This would give a competitive advantage to responsible companies that produce products that can easily be recycled or disposed of. Many of the present absurd packaging practices would quickly be forced out. The revenue from the tax would be sufficient to provide subsidies to create many jobs in a recycling industry. Recycling is particularly appealing because it solves two problems. It reduces pollution by solid wastes, and it reduces the need for new raw materials. The recycling of paper products, for instance, would reduce the demands on our forests and allow us to use "less efficient" but more ecologically sound management.

7. To get at the root of our problem, the goal of production and consumption for its own sake must be changed. It has been assumed that advertising serves the public interest by increasing demand and helping the economy. But it is clear that it is the side effects of the production process that are causing the destruction of our planet. All advertisers should be required by law to provide equal time to those who want to tell the other side of the story, but aren't selling anything and therefore have no money to buy TV time, et cetera. People generally think in terms of having a product versus not having it (a dishwasher using detergents versus washing your own with soap), but the choice is betweeen a dishwasher detergent polluted river, more powerplants versus wash your own with soap and have clean rivers and no need for the new nuclear powerplant. The ecological side of the story must be told, and the industries that make the profit by polluting the environment should pay for the other side to be told. All advertising by public utilities for the purpose of increasing demand for power should be forbidden. There is no reason why PG & E should try to convince people to use more gas and electricity

than they are presently doing. Meeting the existing demand is bad enough without creating more.

In conclusion, the environmental crisis will only be resolved if millions of citizens in their personal and political action demand a better world. We can put the highway people and detergent industry out of business if we just don't buy their products. We can adopt much simpler life styles that require less material goods and leave us more time for enjoyment. We can reject advertising that attempts to convince us that we are not worthy unless we own their newest polluting automobile. We can become politically active and ensure that no public officials are elected unless they have ecologically sound policies. If we do not do this, the lobbies of the industries will ensure that the interests of their industries take precedence over the needs and desires of the people. We urge people to join ZPG (367 State Street, Los Altos, Calif. 94022), Friends of the Earth (30 East 42d Street, New York, N.Y. 10017), or form other non-tax-exempt organizations that can represent the interests of the people who want a livable environment instead of more meaningless consumption.

STATEMENT OF DINA ZVENKO, WOMEN'S LIBERATION, ANN ARBOR, MICH.

DINA ZVENKO. I, Dina Zvenko, am a member of Women's Liberation in Ann Arbor. I would like to voice my opinions on the one ecological problem that affects women most directly, that being overpopulation. As I see it, the solution to overpopulation, at least in this country requires more than finding a safe, effective means of contraception; because women could continue to use birth control techniques just as they do now—before, after, and between having as many children as they want, which may be 10 children. Population control involves a fundamental change in women's roles in this society whereby a woman is no longer indoctrinated from the time she is a child that her identity and fulfillment in life lies primarily, if not entirely, in motherhood and child rearing.

Besides a change in women's attitude about having children, a change in men's attitude about women having children would also alleviate much of the problem. Men—I say men because the vast majority of people with decisionmaking power in this country are men—have not yet allowed women the right to control their own bodies. Abortions, except in very extreme cases, are illegal. Millions of women contribute to the population problem by giving birth to children they don't want. Also, thousands of women in this country die each year from illegal abortions. I might add that most women who get abortions are married and already have more than one child. I'm not asking for abortion reform, that is, i.e. permitting abortions in the case of incest, rape, or insanity. For reforms will not eliminate the humiliation and social stigma women must face before obtaining an abortion. I say all abortion laws should be repealed so that any woman who wants it, can have an abortion on demand.

The phrase "any woman who wants it" is important, for as it stands now the availability of abortions is discriminatory against poor women. Abortions, legal or illegal, are in the neighborhood of $500 to $1,000. Along with the repeal of abortion laws, clinics and other facilities where women can get an abortion done safely and cheaply should also be established.

I previously stated that safe, effective contraception wasn't enough. It seems evident from the testimonies given at the recent hearings conducted by Senator Gaylord Nelson about "the pill," a safe effective means of contraception does not yet exist. What would have been interesting is if the Senate hearing would have investigated some other issues connected with the pill such as: Why were millions of women used as guinea pigs by drug companies? And why doesn't a safe contraceptive exist? The answers to such questions would expose other attitudes about women that must be changed. One of them being that contraception has come to be solely the responsibility of women. Therefore, if a drug comes out on the market that is proven effective, even though certain health risks are involved, it is the woman's obligation to deal with those risks. This also explains somewhat why there has been very little done in the way of contraception for men.

A second attitude is that women in this society are dealt with, above all else, as consumers. When the medical research was done by drug companies to produce oral contraceptives, their priorities were not to discover a safe contraceptive and to ensure the well-being of women. Rather they wanted to produce a product that women would buy, leaving the consequences for the women taking the product. So the pill was pushed on the market and sold to unsuspecting and worried suspecting women. The huge profits reaped by the drug companies from the pill did not act as motivation for continued medical research; instead other methods of contraception were shelved or simply not developed.

In addition to legalized abortion and discovering safe and effective contraception, I think there should be educational programs so women can have a good understanding of how their bodies function. It's only logical that women understand how they get pregnant in order that they prevent pregnancies. Also, women and men should be encouraged to adopt children. People who want children should be convinced that there's nothing sacred about their genes and there are lots of children already born who need parents.

One other aspect of population control that needs very serious consideration is genocide. It seems that at present, the issues central to abortion are that women should have control of their own bodies. However, I can envision a situation in the future, when and if abortions become legalized, where poor women on welfare are ordered by the courts to have mandatory abortions or sterilizations if they wish to continue receiving welfare checks. Mandatory abortions are no better, if not worse, than the present abortion legislation. In both situations the destiny of the woman's body is not her own. I can imagine a very similar discriminatory situation in terms of limiting family size in this country. If the legislator passed a bill that would set a limit of two children per family, it would be the rich that could have their abortions done in the clean hospitals; it would be the rich that could pay the taxes attached to having more than two children; and it would be the rich that would be seen as the most fit parents for adopting children.

In conclusion, I would like to state that I personally feel that population control is a serious problem that must be dealt with immediately. However, I refuse to support and I will directly oppose any population control programs that attempt to solve the overpopulation problem by discriminating against the poor and minority groups or by continuing to and/or further oppressing women.

STATEMENT OF MEL NOLAN, GRADUATE STUDENT, SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF MICHIGAN

Mr. NOLAN. Mr. Chairman, members of the committee, as you know, the President of the United States Secretary of the Interior Walter J. Hickel, and FWPCA's Murray Stein have recently talked about a new water pollution control program. President Nixon sent his environmental message to Congress on February 10, 1970. He has proposed to handle water pollution control in two ways—by new legislation and by administrative order using existing law.

The President's new legislative proposals are:

Passage of a new Clean Waters Act authorizing a $4 billion Federal share of a $10 billion construction grants program beginning in fiscal year 1971.

Establishment of a new Environmental Financing Authority that will purchase bonds from local agencies who cannot sell them at "favorable" interest rates.

To revise the construction grants allocation formula to channel more money to locations where the greatest improvement in water quality will result.

Many experts in the field of water pollution control and abatement agree that the proposed cleanup by Government officials has been taken with little regard for the realities of the complexities of nature and entirely too much faith in outmoded technology.

The estimation is that the Nation has invested about $15 billion in the construction of 7,500 municipal sewage treatment plants, industrial treatment plants, sewers, and related support equipment and facilities since 1952. Nevertheless, 1,400 communities in the United States, including cities like Memphis, Tenn., and hundreds of industrial plants dump untreated wastes into the waterway. Many other cities have only primary sewage treatment, removing only about 33 percent of gross pollutants mechanically. Almost 30 percent of Americans living in communities served by sewers have only primary treatment.

Another 62 percent of Americans live in communities that provide only secondary treatment of sewage using trickling filter or activated sludge systems. Secondary treatment when properly executed will reduce degradable organic wastes by about 90 percent. Chlorination of the effluent from secondary treatment will kill up to 99 percent of viable disease germs in water. The current war on water pollution has a primary objective of achieving secondary treatment for sewage in 90 percent of U.S. municipalities within the next 5 years. Equivalent reductions for most industrial plants are projected for the same 5-year period.

Please do not be deluded into thinking that these efforts are adequate.

The volume of pollutants continues to expand while potable water supply remains essentially the same. Within the next 50 years, the country's population will double, while municipal, industrial, and agricultural demand for water will increase faster than the population growth. Present water uses add up to approximately 350 billion gallons per day. Projected estimates for 1980 indicate 600 billion gallons per day (b.g.d.) will be needed and by the year 2000, water demands for domestic and industrial uses will reach or exceed 1,000 b.g.d. The unchanging supply of dependable potable water will have to be reused, and it will cost more to recondition progressively dirtier water from surface water suppplies.

Most water treatment plants are outmoded, since they were designed for a simpler, sparsely populated world. Approximately three-fourths of the water treatment plants only disinfect drinking water with chlorine which kills bacteria but doesn't remove pesticides, herbicides, or any other dissolved organic and inorganic chemicals from the water.

The Public Health Service (PHS) has listed about 50 contaminants or characteristics of drinking water supplies that must be controlled. Other substances in drinking water have not appeared in the list because they haven't been measured or identified.

Consequently, we go on record as recommending the extension of present efforts in research, development, and training of competent personnel to identify the dissolved organic matter in sewage effluents, surface waters, and ground water. The new water pollution control program of the present administration clearly sidesteps the Federal Government's responsibility in this area. More than 500 new or modified chemicals are introduced on the market every year in the United States without adequate knowledge for treatment and removal of these substances once they are injected into our sewage and surface waters. The identification and detailed analyses of some of these pollutants is just beginning on a systematic basis. The establishment of an official committee to evaluate the effects of insecticides on health was just recently completed by the PHS. The recent announcement of the ultimate closing of the Great Lakes Laboratory of the Bureau of Commercial Fisheries also indicates the lack of interest of the Federal Government in continuing the efforts of this group in defining the quality of the waters in the Great Lakes which serve as a water supply for Chicago, Detroit, and Cleveland as well as smaller cities in this region. No effort has been made to insure the continuation of monitoring the water quality of the Great Lakes. The Federal Water Pollution Control Administration (FWPCA) should be given the responsibility for the surveillance of these lakes and their drainage basins and to continually monitor their water quality in addition to identifying new manmade pollutants dumped into them.

We also recommend the establishment of additional numbers of graduate fellowships and an increase in the stipend level as well as increasing supply and equipment allowances specifically earmarked for the individual student to conduct research. The present supply allowance for students studying under these stipends at the University of Michigan is $400 per year. Gentlemen, the students have found that this sum is totally inadequate to conduct research in the problem areas of our chosen professions. Other research grants and contracts awarded to our thesis professors are carrying the burden of our equipment, chemical, and glassware needs. Traveling to an off-campus site to collect samples and conduct analysis is out of the question unless your faculty advisor can furnish the traveling expenses from other sources. Unfortunately, the pollution sources aren't on our campus. Earlier, I mentioned that some dissolved organic substances of man-made origin are contained in our drinking water supplies and we rationalize that very often they can be first detected in sewage effluents from primary or secondary sewage treatment plants. In figure 1, I have presented some data on the fingerprinting of the dissolved organic complexing compounds which my colleagues and professors have identified in Ann Arbor sewage treatment plant effluent before chlorination. We are concerned that these and other organic chelating substances present in most sewage effluents could stimulate algal growth by making trace metals already present in the receiving water more available to algae.

(NOTE.—Figure 1 referred to above follows the bibliography at the end of Mr. Nolan's statement.)

In preliminary algal growth studies conducted with each of the molecular weight fractions isolated from sewage increases algal populations. Both Lake Michigan and Third Sister Lake were observed with a 500–1,000 molecular weight fraction. Presently, we are attempting to identify the components of this fraction and conduct additional experiments to define their effect on stimulating the growth of natural mixed algal populations. There are numerous other possible trace nutrients other than phosphorus, nitrogen, and gross dissolved organic material that need to be identified and used to pulse the biology of the aquatic environment.

Pollutants that secondary treatment facilities fail to eliminate will increase in volume more rapidly than industry and population growth. Phosphate, nitrate, and nondegradable detergent removal haven't been adequately shown to be the solution to decreasing foam and algal mats in our surface waters. There is a possibility of substituting a nonphosphorus builder in detergents; however, more research into the fate and effects of the substitutes is necessary before wholesale use begins. A bill is before Congress that would ban phosphorus from detergents by mid-1971, but farms, cities, and factories contribute various forms of phosphates to algae-clogged lakes and rivers.

Advanced nonbacterial technologies show promise in removing the ever-increasing percentages of phosphates originating from domestic and industrial wastes loads from sewage. The conventional biological waste treatment methods being pushed by the Federal water pollution agencies cannot effectively degrade all of the contaminants introduced to these facilities. Tertiary treatment facilities are aimed at removal of almost all contaminants. Toxic industrial wastes have, on many occasions, wiped out the bacterial populations of secondary municipal treatment plants for weeks. Scientists at the Robert A. Taft Water Research Center in Cincinnati, Ohio, have proposed physical-chemical processes to accomplish secondary and tertiary treatment of sewage. The sewage is first clarified by chemical flocculation which removes most suspended organic solids including most of the phosphate. Carbon adsorption filter beds are used for removal of dissolved organic material and additional phosphates. The flocculation and activated carbon adsorption removes 90 percent or more of the phosphate. The carbon can be regenerated in furnaces and reused. The adsorbed organic matter is burned. Carbon adsorption also removes industrial chemicals from the water which pass unremoved and undegraded through secondary biological treatment plants.

Chemical process treatment techniques are also being studied that would recondition sewage into potable water. Processes such as reverse osmosis using semipermeable membranes to remove ammonia nitrogen, phosphates and most nitrate and other dissolved substances in water are being studied in pilot plants facilities. Engineers are attempting to design beter membranes. The eventual product of this effort is reusable water rather than an effluent to discharge to some receiving water designated by a State agency for that purpose. Recycled reconditioned water is the ultimate goal to satisfy future water needs.

Congress shows a distinct lack of orientation towards a largely urban population when grants for construction of waste-treatment plants was limited to $250,000 per municipality. This dollar ceiling was raised but not removed until fiscal 1968. In the preceding 12 years almost half of the sewage treatment plants were built in villages with populations less than 2,500 and 92 percent with populations under 50,000.

Congress has also left it up to the States to decide on pollution control goals in determining the uses for a particular stream or lake. Each State decides stream characteristics such as dissolved oxygen, temperature, phosphates, nitrates, residual chlorine, suspended and dissolved solids. Each State then sets up its own schedule for corrective measures that would insure the stream quality agreed upon and prepare legal enforcement of the standards.

We recommend the elimination of this piecemeal approach to solving the pollution problems of these intra- and interstate waterways. We believe the most reasonable approach to the solution of chemical, biological, and thermal pollution problems is the establishment of regional authorities or basin commissions such as the Ohio River Valley Sanitation Commission, ORSANCO, and Delaware River Basin Commission, DRBC, of which the Federal Government is a member. An example of the confusion caused by State-submitted standards in June 1967 occurs along the Ohio River where Pennsylvania-Ohio, West Virginia-Ohio, Kentucky-Ohio, and Indiana-Kentucky set different standards for water characteristics such as temperature. Kentucky submitted maximum temperature standard of 93 degrees Fahrenheit while Indiana wants 90 degrees, Ohio set its limit at 93 deegrees, while West Virginia chose 86 degrees, and Pennsylvania decided on 86 degrees Fahrenheit. I sincerely hope the natural biological populations of the Ohio River can properly acclimate to these ambivilent sets of standards. Michigan has a regional problem of establishing both regional and international quality standards. Certainly, thermal pollution and radioactive wastes levels are possible future problems for the future of the Great Lakes. It is well established that thermal pollution accelerates entrophication in lakes and changes the species diversity in rapidly flowing streams and rivers.

We recommend that offshore oil drilling companies be required to build floating retention basins and or be charged a fee from $10,000 per day for oil discharges into lakes and estuaries to cover the expense of removing and destroying oil slicks. We recommend the establishment of special research grants for the study of the identification of specific crude oil types to pinpoint offenders. We also recommend research on the chronic effects of periodic and continuous small oil spills on the chemical and ecological changes of lakes and estuaries.

We recommend the establishment of an agency at the Federal level of government to coordinate the exchange of research information on the degradation, metabolic pathways, toxicity and vectors of transport for insecticides and herbicides. This agency should also be charged with the responsibility of monitoring pesticide levels in water levels and setting up standards for the use of pesticides and promoting mutual trust between existing Federal agencies in the exchange of valid data.

Federal funds would do more good in eliminating water pollution problems if river basin and/or regional lines were set up. More funds need to be channeled into applied research efforts directed towards identifying and measuring new and existing undetected organic materials and trace metals in surface waters and sewage plant effluents. Funds should also be allocated towards developing new waste treatment processes and putting them to use. Research is needed to define the chronic and acute effects of recycling reconditioned waste water in the United States before we are compelled to resort to this source of potable water supply.

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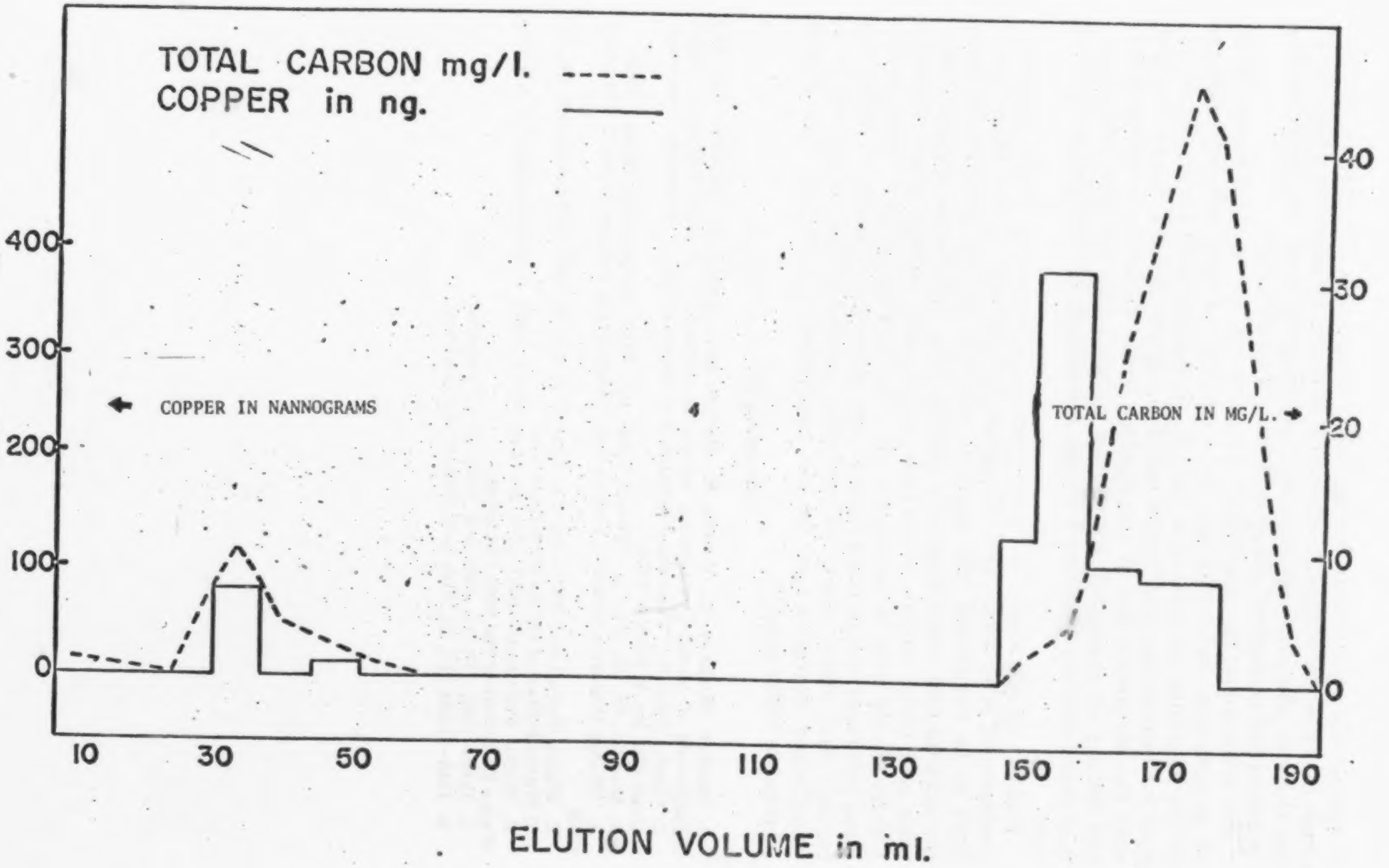
TOTAL CARBON mg/l.
COPPER in ng.
COPPER IN NANNOGRAMS
TOTAL CARBON IN MG/L.
400
300
200
100
0
40
30
20
10
0
10
30
50
70
90
110
130
150
170
190
ELUTION VOLUME in ml.

STATEMENT OF RICHARD W. DODDS, STUDENT, SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF MICHIGAN

NUTRITION AND ENVIRONMENT

Mr. DODDS. Nutrition is an environmental problem because it affects our growth, helps determine the quality of life which we experience, and takes away environmental resources such as water and energy which are in very short supply.

For example, our diet in the United States includes a lot of meat; and meat is very expensive in terms of the resources consumed to produce it. Plant food for nourishing one human for 1 day costs 300 gallons of water to produce. One pound of beef protein, which is not enough to nourish one human for 1 day, costs 2,300 gallons of water to produce. Our present standard of living uses 15,000 gallons of water per person per day. Given our rainfall, that means that the maximum population at this standard of living in terms of water alone which we can support is 230 million people. We are nearing that brink today. Without population control we will ultimately have to give up meat protein in our diets.

Thus, nutrition is an environmental resource problem. But nutrition is also the environment from which we draw resources for our brains to grow, for our intelligence to develop, and for our bodies to gain height and weight.

Overnutrition is associated with cardiovascular disease and diabetes; it has recently received much deserved attention. However, qualitatively bad nutrition is not getting sufficient attention even for old, well-established issues which everyone assumes have been disposed of but are really lingering on. Our health education system has failed when 20 percent of our families do not use iodized salt in their homes—even in areas of endemic goiter like the Great Lakes region. Most consumers do not know that they should want iodized salt. To my own dismay, I discovered today that two of the three cartons of salt in my own home are noniodized. It is a failure of our laws that all the table salt for human consumption in the United States is not required to be iodized. As a result restuarants, canned and prepackaged foods, and institutions which purchase their salt in bulk are using noniodized salt. And yet one estimate is that it would cost only $10,000 to iodize all the salt for human consumption in the United States.

When will we as a Nation make a commitment to spread nutrition information adequately among our people? Eating laundry starch in order to suppress appetite does not control weight, but it is widely practiced among the poor. It costs dairies one penny to add vitamin D to 1,000 gallons of milk. Yet when I bought milk in Maryland, the vitamin D milk at the retail outlet cost $20 per 1,000 gallons more than the nonvitamin D milk from the same dairy. And then the cartons were so very similar in color and layout that it was hard to discover when the milk label failed to show vitamin D. When will we teach our people on prime-time television and other communication forms that iron-deficiency anemia in children is prevented by a diet of infant cereals, egg yolk, and red meat—not by spinach, most patent medicines, or hot dogs?

Overnutrition and bad nutrition are problems. But I want to direct the majority of our attention today to undernutrition in the United

States. In my opinion it should be an official, positive, explicit, written policy of the U.S. Government that no infant- or child-citizen should suffer retarded intelligence, shortened height, inadequate weight gain, damaged nervous system, or delayed developmental milestones because of malnutrition.

I would suggest the creation of a national institute for nutrition and charge it with primarily sociological and political duties—though not excluding the biomedical. This institute should implement the nutrition services which it finds appropriate as a result of its research and development. It should conduct research and development on methods of distribution of food, culturally appropriate foods, and nutrition education through mass-media aimed at the entire population. Methods for distribution of free foods should be sought which avoid the utilization barriers which I will describe later; for example, perhaps there should be neighborhood delivery of free food to homes in poor areas or perhaps community nutrition aides should be trained and sent into poor homes. Foods must be culturally appropriate to the people of the target population, as well as nutritionally adequate. Dr. Jack Geiger has suggested food forms and packages for "soul food" under a jolly black giant label. The institute should be concerned with prime-time mass media nutrition education techniques and should determine the desirability of starting, supporting, or legally protecting food-purchasing cooperatives started by the poor for their own neighborhoods. Lastly, food distribution programs should be under the control solely of Health, Education, and Welfare and not under the Department of Agriculture.

These proposals are aimed at the following kinds of nutrition environment problems: When I lived and worked in Pittsburgh, Baltimore, and Washington, D.C., I saw the effects of undernutrition firsthand. I saw children fail to thrive for lack of intake of adequate food. Children get some reversible and some irreversible suppression of intelligence from malnutrition, but it is all preventable. Mental retardation from malnutrition is a preventable disease. The malnourished brain does not grow as fast as normal. The reflexes are depressed. The children get infected more easily with bealed ears and pneumonia. How frustrating it is for a physician to be able to write a welfare or medicaid prescription for $60 worth of ampicillin for the infection, but he can't write the food prescription that might prevent a recurrence of the infection. When he sees a child failing to grow in height or weight for lack of food, he can't write for the drug of choice: the right foods.

The existing social institutions for discovering who is malnourished and for getting food to them are inadequate. When poor people in Baltimore formed a food-purchasing cooperative, they were driven out of business by local food-handling ordinances invoked by the independent grocers. Let me emphasize, the institutions are inadequate; but the technology is known; it is unused or blocked.

Another bit of unexploited technology is the simple height and weight growth chart. I believe there should be a national commitment to monitor the adequacy of growth of every child in the United States. Let us teach families—every family—how to chart the growth of each of their children and to seek care if growth is low on the curve.

We need to learn what are the barriers to the utilization of free food programs by our malnourished population. When free milk for infants was given to poor families in one Baltimore program, it was stacked in unwieldy heavy cases in a clinic waiting room to which black mothers usually walked several blocks with most of their children. Now, even if it is free, a woman can't carry enough milk for all of her children in heavy bulky cases several blocks' walk and also watch the safety of her children. Is it any wonder that the effects of the milk on this population were unmeasurable?

Our nutrition is an important part of our environment. It affects us both grossly and subtly. Let us make a national commitment to make our nutritional environment adequate for all of our people.

STATEMENT OF JAMES T. DENOVAN, GRADUATE FELLOW IN ENVIRONMENTAL HEALTH SCIENCES AT THE UNIVERSITY OF MICHIGAN

NUCLEAR POWER AND ENVIRONMENTAL POLLUTION

Mr. DENOVAN. I would like to speak today on two subjects concerning nuclear power and environmental pollution. The first subject is the direction I believe this country should take in regards to electrical power production. The second is some essential areas for research on environmental problems and what the Government's role should be.

I feel, as do most people in the United States, that there should be no sources of pollution contaminating the air and water in our environs. However, we are faced with an environmental crisis that the ever increasing population and technology have created. We have the problem of cleaning up our environment while still maintaining or improving our present standard of living.

Our cities have become choked with smog and smoke from automobiles and industrial plants. There is a continual buildup of sulfur dioxide and lead in our environment reaching as far as the Arctic. Present power production by fossil fueled plants and automobiles are the largest contributors to our air pollution problem. It has been estimated that by the year 2000 the emission of sulfur dioxide from fossil fueled power plants may reach 60.7 million tons annually.

Many of our lakes and rivers are dying from municipal and industrial wastes. Excess phosphates and nitrates from poor or nonexistent sewage treatment create large algal blooms, and in many cases kill aquatic organisms. Pulp mills, steel mills, and other sources of toxic substances may completely strip a body of water of all living material. Dams may destroy the scenic beauty of rivers and interrupt the normal life processes taking place in a river.

A possible solution to some of our environmental problems would be to produce electrical power by nuclear reactors. Our needs for electrical power double approximately every 10 years. Also, if we are to eliminate automobile pollution, we may have to go to electrical cars, which could require even more electricity. There is also a diminishing supply of fossil fuels to operate conventional powerplants. Therefore, I believe that we must turn to nuclear reactors for our power requirements.

Perhaps this sounds like replacing one type of pollutant with another, but I believe that nuclear reactors will not create environmental problems as serious as other types of power production. The reason for this belief are twofold. First, the effects of radiation have probably been studied more and are better understood than the effects of any other toxic substance. Most other industrial pollutants have been studied very little with emphasis being placed primarily on the short-term effects. Thousands of experiments have been conducted on both the short-term and long-term biological effects of radiation. Second, the nuclear industry is probably the most stringently controlled of any industry in the United States. The amounts of radionuclides that may be released by nuclear industries are carefully controlled by the Atomic Energy Commission and other governmental agencies. These limits for radioactive materials have been determined after many years of study by scientists throughout the world. The amounts decided upon have been based on both long-term and short-term effects of radiation.

Future generations have been of utmost concern in the setting of radiation standards while other industrial pollutants have been controlled with only the short-term effect as the prime consideration. Various Federal and State agencies keep careful watch over the amounts of radionuclides present in the aquatic and terrestrial environments, and constant air- and water-sampling programs are conducted. The nuclear industry generally puts more stringent controls upon itself than the Government requires. In actual practice most nuclear installations release much less radioactivity to the environment than is allowed by Government standards.

Continual research is being conducted on better methods for removal of radioactive materials from reactor effluents. As the technology becomes available, less and less radioactivity will be released to the environment by nuclear facilities. It is for these reasons that I believe that nuclear power is the safest and cleanest energy source we have today and should be given every consideration when pollution problems are being deliberated.

While supporting nuclear energy, I do feel that all types of environmental contaminants, including radiation, should have much more time and energy devoted to research. In particular, the effects of these contaminants on the delicate balance in aquatic and terrestrial ecosystems should be studied. Government and industry should support research on improved methods for safe disposal of all types of pollutants.

In regards to the Government's role in control of pollution and safety aspects of nuclear installations, I believe that the Atomic Energy Commission has been very effective. The AEC is responsible for both promotion and control of nuclear power, and they have been able to make the nuclear industry one of the safest. However, I do feel that any agency having responsibility for both promotion and control of any product places itself in a compromising situation. Perhaps it would be best if one agency were responsible for control and another for promotion of nuclear power.

STATEMENT OF WARREN P. MILLER, GRADUATE STUDENT IN THE DEPARTMENT OF RESOURCE PLANNING AND CONSERVATION, SCHOOL OF NATURAL RESOURCES, THE UNIVERSITY OF MICHIGAN

Mr. MILLER. I am Warren P. Miller, currently a resident of Ann Arbor, Mich., and a graduate student in the natural resources administration program of the Department of Resource Planning and Conservation, School of Natural Resources, the University of Michigan.

I would like to share with you today a few random thoughts on the overall organization and administration of the Federal Government's response to this new nationwide awareness of environmental problems and to offer a few specific suggestions on how present Federal programs might be restructured and new endeavors undertaken. But before I begin I would like to express my personal appreciation for the opportunity to appear here today, and to commend the subcommittee for taking time out of its busy schedule to come here and elicit the opinions of students on the broad range of environmental problems which face this Nation. Some of our comments may be somewhat more forthright than is common at congressional hearings; some may seem, at least at first glance, to smack of academic impracticality. Without presuming to speak for any of my colleagues here today, I would venture to say that none of us believes he has all the answers. Hopefully, though, we can provide you with a few fresh insights into these critical problems.

A great many Americans, if not a majority, are aware of and concerned about environmental problems. That environmental quality is now recognized (at least philosophically) as a popular and therefore politically supportable cause is evidenced by the President's state of the Union address and several of his subsequent messages to the Congress, and by the spate of environmental legislation that has been introduced both in the Congress and in many State legislatures across the Nation. Yet much of the substantive legislation is predicated on the continuation of existing governmental approaches to problems, rather than exploring new ones. Basically, the response has been either to spend more money on existing programs or to enact stricter regulatory measures.

This is not to say that more money and stricter regulation is not needed in some areas. But I would submit that other changes are needed as well.

Possibly the most important facet of the general concern about environmental quality is that we as a society are finally awakening to the realization that our actions, whether individually or collectively taken, must be judged in the context of the overall goals and aspirations of society, and not just on the basis of whether they accomplish the narrowly stated purpose for which they were undertaken. If this is indeed the case, as I believe it is, then virtually all governmental programs must be rethought. By and large, the Federal Government's domestic programs are mostly made up of separately enacted smaller programs designed to deal with one particular problem or set of problems. Sometimes there is continuity and order, sometimes not. A particularly good example of this problem is the Federal Government's involvement in the vital and complicated business of moving people and goods from one place to another: Transportation. There is Federal involvement in virtually every mode of transportation, and each type of involvement has its own history: Safety regulations for the railroads in the 19th century, and for automobiles in the 1960's; Federal aid for road construction beginning before 1920, and Federal involvement in aerial navigation and, later, airport construction as that mode of transportation became nationally important. Each program has grown independently and, while all of the nonregulatory transportation programs are now housed administratively under one departmental roof, the programs' enabling legislation and appropriations authorizations are the province of several different committees in the House and Senate.

Similar comments could be made about the Federal involvement in water resources planning and development, with the Corps of Engineers (flood control and navigation), the Bureau of Reclamation (principally irrigation), the Department of Agriculture's small watersheds program (Public Law 566)—to name a few—all involved in the construction of dams and other water control structures.

These two cases are neither the only nor the most serious examples of confused governmental involvement in environmentally critical areas. Citing them does, however, make a point: Before any real and lasting order can be made of the Government's environmental programs, there will have to be a large-scale review of administrative organization and of congressional committee jurisdictions. I urge you to consider, therefore, the creation of a "Special Task Force on Executive and Congressional Reorganization for Environmental Programs." Composed of individuals from both the executive and legislative branches of the Federal Government and from outside the Federal Government, chaired by a distinguished private citizen appointed by the President with the approval of both Houses of Congress, the task force would have the difficult job of analyzing virtually all Federal domestic programs to determine how they can be best fit together into Cabinet-level departments, and to recommend a realinement of congressional committee responsibilities which would bring all related Government programs under the jurisdiction of a single committee in each House.

Whether governmental reorganization on such a massive scale could ever be accomplished is problematical. To say that a realignment of the responsibilities of many of the oldest and most prestigious committees would be traumatic is to understate the case. I believe such an enormous task would be highly desirable, nonetheless.

In the same vein but on a slightly less formidable level, serious thought should be given to the consolidation of all Federal and federally supported environmental research and development efforts under one independent agency. In many instances several agencies are conducting or sponsoring research in a given field, with little or no coordination as to who is funding what and, more importantly, whether all types of research in a given problem area are in fact being supported.

The creation of an independent Environmental Research Agency, similar in autonomy to the National Science Foundation, would be able to provide a more coherent framework for the Nation's environmental research effort. Its greatest influence would come, however, if tied to a National Environmental Planning Council, also independent of the administrating departments and agencies. My arguments for such a council are based on the same thesis as that on which my recommendations regarding executive and congressional committee reorganazition are predicated: That many of the Federal agencies most intimately involved with environmental matters are geared to produce one type of product or service, and should not be held responsible for deciding what type of product or service is needed to solve a particular problem. In the past, the Bureau of the Budget has fulfilled an analogous role, balancing off the efficacy of various solutions and proposals to a given problem; I would suggest that this function should be systematized and made independent of the executive, and that the process of decisionmaking be restructured: Once a problem or potential area of Federal involvement is identified, it would be the responsibility of the planning council to determine the best approach—the best type of solution; only after this is accomplished would a line operating agency be given the responsibility of developing specific program plans and effecting them.

Now that I have presented a number of generalized, long-range (some might call them "blue-sky") suggestions, permit me to offer a few specific and programatic recommendations:

1. *Transportation planning and fiuancing*

The Highway Trust Fund should be abolished and replaced with a Transportation Trust Fund, into which would be paid all of the current taxes and revenues now accruing to the Highway Trust Fund. Likewise the newly established Airport Trust Fund. The Transportation Trust Fund should also receive from the general treasury revenues an amount no less than is now authorized for urban mass transit and interurban rail demonstration projects. The establishment of such a fund would permit, for the first time, the development of coordinated transportation plans throughout the Nation and especially in urban areas, by removing some of the uncertainty which has plagued transportation planners as to the potential availability of funds for mass transit grants even a few years hence.

2. *Water resources and water pollution control*

The Congress is to be commended for its actions in apropriating funds for water pollution control last session. So, too, is the President for his recently announced program for the construction of municipal wastewater treatment plants. Yet as valuable as these funds are, much more is needed. Furthermore, treatment of municipal sewage is not going to solve the water pollution problems in this country; it is becoming increasingly clear that storm water discharges, especially in urban areas where air pollution is a serious problem, are a major source of pollutants to the receiving waters.

Yet while technologies are available for the treatment of some wastes, and some areas of water resources research are being increasingly supported, one of the most important research efforts engaged in the investigation of the ecology of the Great Lakes, the largest supply of fresh water in the Nation, has been downgraded. I strongly urge that full funding be restored for the Great Lakes Research Laboratory and support staff, regardless of whether the facility is administratively transferred from the Bureau of Commercial Fisheries to the Bureau of Sport Fisheries and Wildlife, or not. The interruption of on-going research activities would be far more costly to the Nation's environmental quality program than the dollars to be saved would indicate.

3. *Planning assistance*

Section 701 of the Housing Act of 1954 has provided State and local governments with badly needed funds with which to develop comprehensive planning programs. In addition to its impact on Federal and State governments, the new concern for environmental problems has stimulated, at the local government level, commitments to environmental programs. If these programs are to become reality, and to be soundly conceived, great care must be taken in their planning. It is my understanding that many community planning programs previously supported by 701 grants are being phased out, just at a time when the potential payoffs from them seem to be greater than ever.

4. *Community citizen participation in environmental quality*

We are only just grasping the complexity of our environmental problems. While a strong leadership role is needed on the part of the Federal Government, it is imperative that citizens be encouraged to take part in the decisionmaking processes at the local community level. As the issues become more complex and the solutions more complicated, this will become increasingly more difficult unless new management and institutional strategies are developed, and new communications techniques devised for presenting options and alternatives to the layman.

There are already examples where elected and appointed local officials have accepted, largely on blind faith, the recommendations of engineers, systems specialists, and other technically oriented professionals as to how the community should proceed in solving a problem. Unless policymaking is to be given over entirely to the technical professions, a new breed of "environmental generalists" is needed: Individuals, or teams of individuals, who are able to act as interpreters between the technical specialists, the planners, and the citizenry, to assist the residents in planning for the future, then to "translate" these environmental goals to the planners and technical specialists, and, finally, present the results of their deliberations back to the lay members of the community for their decision.

The use of such a decisionmaking technique would not be inexpensive, nor will it expedite community policy decisions. Yet as our society becomes increasingly more complex, and solutions to technological and sociological problems are demanded, it is the only alternative I can foresee to what amounts to an abdication of participatory democracy in favor of chaotic nondecisions and nonplanning or increased Federal—and to a lesser extent State—control over local decisions. Neither solution is particularly attractive, at least to me; nor is either alternative necessary.

Thank you.

STATEMENTS OF ROGER L. CONNER AND WILLIAM A. IRWIN, UNIVERSITY OF MICHIGAN LAW SCHOOL, ENVIRONMENTAL LAW SOCIETY

INTRODUCTION

Mr. CONNER (for and with Mr. Irwin). There is growing evidence that the problems of pollution and other environmental ills are growing worse, and that strategies for coping with them have yet to be devised. The prophets of doom are having a field day; the frightening part is that they may be right. In light of the impending crisis, the responsibility of this Congress is awesome indeed. We offer the following ideas as specific steps which the Congress can take in order that we can better protect our earth.

The University of Michigan Environmental Law Society and ENACT (Environmental Action for Survival) urge consideration of the following specific legislative proposals:

1. Amend section 702 of title 5 of the United States Code by adding the following language:

> An action in a court of the United States seeking relief other than money damages and stating a claim that an agency or an officer or employee thereof acted or failed to act in an official capacity or under color of legal authority shall not be dismissed nor relief therein denied on the ground that it is against the United States or that the United States is an indispensable party. The United States may be named as a defendant in any such action, and a judgment or decree may be entered against the United States. Nothing herein (1) affects other limitations on judicial review or the power or duty of the court to dismiss any action or deny relief on any other appropriate legal or equitable ground; or (2) confers authority to grant relief if any other statute that grants consent to suit expressly or impliedly forbids the relief which is sought.

A recommendation embodying this language was adopted by the Administrative Conference of the United States on October 21, 1969 (recommendation 9), and reported a week later in 38 U.S. Law Week 2242 (1969). The following paragraphs in support of the recommendation are quoted with permission of Roger C. Cramton, professor of law, University of Michigan, from his January 1970 article in the Michigan Law Review entitled "Nonstatutory Review of Federal Administrative Action: The Need for Statutory Reform of Sovereign Immunity, Subject Matter Jurisdiction, and Parties Defendant," which appears in 68 Michigan Law Review 389–470:

> Today, even more than in the 1950's, it is true that "the Supreme Court in modern times has * * * tended actually to enlarge the scope of sovereign immunity, out of misapprehension of its historical foundations. * * *" The Court now seems to regard it as settled that the general contours of the doctrine were established in *Larson* v. *Domestic and Foreign Commerce Corp.* (337 U.S. 682 (1949). Since there is no discernible pressure for change emanating from the Supreme Court, the impetus for reform must come from Congress. The failure of the courts to develop a sound jurisprudence in this area argues in favor of a legislative solution. Moreover, important questions of policy, appropriate for legislative judgment, are involved and a legislative approach to the problem is desirable.
>
> The need for statutory reform of sovereign immunity rests fundamentally on the belief that the doctrine hinders a rational determination of basic issues of the availability, the timing, or the form of judicial review of administrative action. Sovereign immunity as a barrier to judicial review of administrative action should be eliminated, but without otherwise affecting the availability or timing of judicial review. This beneficial step can be taken without expanding the liability of the United States for money damages and without displacing

congressional judgments, embodied in various statutes, that a particular remedy should be the exclusive remedy in a given situation.

It is time for Congress to reassert the fundamental proposition stated by Justice Miller in 1822: "Courts of justice are established, not only to decide rights in controversy between them and the Government. * * *" (*United States* v. *Lee*, 106 U.S. 196, 220 (1882)).

The law of sovereign immunity, as elaborated in a number of fairly recent cases, is illogical, confusing, and erratic. Law that is confused, artificial, and erratic is likely to produce unjust results as well as wasted effort. The doctrine of sovereign immunity fulfills these unpleasant expectations by distracting attention from the real issues of whether judicial review or specific relief should be available in a particular situation and by directing attention to the sophistries, false pretenses, and unreality of present law.

If problems related to sovereign immunity arose infrequently, it would be possible to regard the defects and wastefulness of the doctrine with a degree of equanimity. The litigating practice of the Department of Justice, however, ensures that sovereign immunity arguments are presented in hundreds of cases each year. The Department asserts sovereign immunity, usually as one of a battery of grounds for dismissal of a plaintiff's complaint, in a substantial portion of the cases involving nonstatutory review of Federal administrative action. Only if tradition or holdings make it absolutely clear that the suit against the officer is an appropriate form of judicial review, as in the case of Post Office fraud orders, is the defense not asserted. This practice was recently criticized by Judge Friendly, who said: "[L]aw officers of the Government ought not to take up the time of busy judges or of opposing parties by advancing an argument so plainly foreclosed by Supreme Court decisions." Despite this statement, however, the confusion in the case law provides justification for the use of a sovereign immunity argument by government lawyers, who are as eager to win their cases as are the other lawyers. Busy district judges, less familiar than Judge Friendly with the intricacies of nonstatutory review, are often led to deny a hearing on the merits to some litigants who should receive one. Indeed, the Mandamus and Venue Act of 1962, by allowing nonstatutory-review actions to be brought in the plaintiff's home district rather than solely in the District of Columbia, has had the effect of exposing all Federal judges to a highly intricate specialty of Federal law that had prevously been mastered by only a few.

The doctrine of sovereign immunity has been part of Anglo-American law for centuries. Legislative provision of remedies against the United States has taken place against a background in which sovereign immunity was an important feature. The major problem in drafting a reform statute is to achieve the objective of facilitating nonstatutory judicial review of Federal administrative action without affecting the existing pattern of statutory remedies, without exposing the United States to new liability for money damages, and without upsetting congressional judgments that a particular remedy in a given situation should be the exclusive remedy.

These objectives may be accomplished by adding the above language to section 702 of title 5 of the United States Code.

An explanatory note provided by the Committee on Judicial Review of the Administrative Conference of the United States is also included.

Explanatory note

A. AMENDMENT TO 5 U.S.C. § 702

1. *Applicability of recommendation.* The first clause of the proposed recommendation limits the application of the doctrine of sovereign immunity Claims challenging official action or nonaction, and seeking relief other than money damages, should not be barred by sovereign immunity. The explicit exclusion of monetary relief makes clear that sovereign immunity is abolished only in actions for specific relief—injunction, declaratory judgment, mandatory relief, quiet title, and ejectment. Thus limitations on the recovery of money damages contained in the Federal Tort Claims Act, the Tucker Act, or similar statutes are unaffected. The consent to suit is also limited to claims in Federal courts; hence the United States would remain immune from suit in State courts. The waiver of immunity extends only to actions challenging the legality of Federal action (or nonaction); it would not extend to proceedings in which Federal officers or agencies are not acting in their "official capacity or under color of legal

authority." This language is taken from 28 U.S.C. § 1391(e), which would govern venue and service-of-process in actions falling within the purview of the recommendation.

Although the recommendation does not use the term "specific relief," the principal effect of the amendment will be to cut off the defense of sovereign immunity in suits for specific relief. Perhaps 90 percent of the cases affected will be suits for injunction or declaratory judgment or for both, and perhaps most of the rest will be suits for relief in the nature of mandamus. Other forms of specific relief—for example, quiet title, ejectment, habeas corpus—are included. Recovery of money damages, however, is excluded from the recommendation.

Because the amendment is to be added to 5 U.S.C. § 702 (a provision of the Administrative Procedure Act entitled "right of review") it will be applicable only to functions falling within the definition of "agency" in 5 U.S.C. § 701. Section 701(b)(1) defines "agency" very broadly as "each authority of the Government of the United States, whether or not it is within or subject to review by another agency" except or a list of exempt agencies or functions: Congress, Federal courts, governments of territories or of the District of Columbia, mediation boards, courts-martial, and certain other military, wartime, and emergency functions. The proposed amendment will also not apply "to the extent that * * * statutes preclude judicial review * * * or * * * agency action is committed to agency discretion by law." 5 U.S.C. § 701(a). The case law concerning the two categories of review precluded by statute and action "committed" to agency discretion is thus untouched by the proposed amendment.

2. *Binding effect of judgment.* The recommendation does not in express terms deal with the conclusiveness of a judgment in a suit against an officer or agency. Under existing law, however, when the Attorney General or other authorized legal officer of the United States defends an officer or agency acting in his official capacity or under color of legal authority, the United States is bound by the resulting judgment or decree unless under the circumstances it would be unfair to bind the United States. The courts may be relied upon to handle this matter sensibly.

3. *Law other than sovereign immunity unchanged.* Government defenses other than sovereign immunity remain unaffected by the proposed amendment. Indeed, all law other than the law of sovereign immunity is unchanged. A very large proportion of all cases that have been disposed of on the ground of sovereign immunity, perhaps as many as nine-tenths, might have been won by the Government on some ground other than sovereign immunity, including the merits. Because nothing is changed except the law of sovereign immunity, and because all other constitutional law, statutory law, and common law remains unchanged, the Government may still win cases on such grounds as unreviewability, standing, ripeness, exhaustion, primary jurisdiction, or any other legal or equitable principle. Yet to the extent that the proposed amendment will remove the defense of sovereign immunity, a larger proportion of the cases brought will be decided on their merits.

The lack of effect on law other than sovereign immunity is not left to implication: clause (1) of the proviso makes clear that other limitations on judicial review are unaffected and that all other legal and equitable grounds for dismissal of actions for specific relief are preserved. These grounds include, but are not limited to, the following: (1) extraordinary relief should not be granted because of the hardship to the defendant or to the public ("balancing the equities"), or because the plaintiff has an adequate remedy at law; (2) action committed to agency discretion; (3) express or implied preclusion of judicial review; (4) standing; (5) ripeness; (6) failure to exhaust administrative remedies; and (7) an exclusive alternative remedy. Special doctrines favoring the United States as a litigant, such as the inapplicability of statutes of limitations to claims asserted by the United States, are unaffected. Statutory or rule provisions denying authority for injunctive relief (for example, 26 U.S.C. § 7421 and 28 U.S.C. § 2201, prohibiting injunctive and declaratory relief against collection of Federal taxes) or other matters (for example, rule 13(d), dealing with counterclaims against the United States) remain unchanged.

4. *Where Congress has provided an exclusive remedy.* Clause (2) of the proviso is concerned with situations in which Congress has consented to suit and the remedy provided is intended to be the exclusive remedy. The Tucker Act and the Court of Claims Act provide apt illustrations. Congress, by creating a damage redemy for contract claims, with jurisdiction limited to the Court of Claims except in suits for less than $10,000, intended to foreclose specific performance of Government contracts. In the terms of the proviso, a statute granting con-

sent to suit, for example, the Tucker Act, "impliedly forbids" relief other than the remedy provided by the act. Thus the partial abolition of sovereign immunity brought about by the proposal does not change existing limitations on specific relief, if any, derived from statutes dealing with such matters as Government contracts, Indian claims, patent infringement, tax claims, and tort claims. Statutes providing an exclusive method of judicial review of particular administrative action also remain unaffected. The intent of the proposal, however, is to overrule *Malone* v. *Bowdoin*, 369 U.S. 643 (1962), which held that sovereign immunity barred specific relief for an alleged unconstitutional taking.

The language of clause (2) of the proviso directs attention to particular statutes and the decisions interpreting them. If a statute "grants consent to suit" with respect to a particular subject matter, specific relief may be obtained only if Congress has not intended the provision for monetary relief to be the exclusive remedy.

Clause (2) of the proviso does not withdraw specific relief in any situation in which it is now available. It merely provides that new authority to grant specific relief is not conferred when Congress has dealt in particularity with a claim and intended a monetary remedy to be the exclusive remedy.

2. Amend section 411 of title 33 of the United States Code by increasing the amount of the maximum fine to $8,000 and of the minimum fine to $3,000.

3. Enact legislation providing for regional intrastate and interstate water quality management associations supported by revenues levied either by the associations themselves or the Department of Treasury on all substances discharged into navigable waters of the United States which impair or degrade the quality of those waters.

S. 3181, introduced November 25, 1969, by Senator Proxmire and nine others, is an example of such proposed legislation, the rationale for which was stated in Dr. Allen V. Kneese's testimony to the Joint Economic Committee of Congress on September 23, 1969.

(SUBCOMMITTEE NOTE.—See also Dr. Kneese's testimony before the subcommittee concerning S. 3181, supra, Friday, Feb. 6, 1970.)

4. Give citizens standing to sue administrative agencies or private persons who are damaging or threatening the environment.

The primary efforts thus far in the area of environmental quality have been essentially limited to setting out specific standards for particular problems, and then establishing some mechanism for enforcement. While such legislation is necessary, it is not sufficient to cope with the varied threats to the environment which we face. The difficulty is that every problem cannot be foreseen in advance; some mechanism for dealing with unanticipated or neglected problems must be established. In the more traditional areas of property, tort, and contract law we have long recognized that statutes cannot be drafted to meet every problem, and thus we rely on the common law system. It would seem that if citizens could go to the courts, we could better meet environmental problems as they arise, devising a solution appropriate to the occasion. What we need is the development of environmental common law.

Another reason to open the courts to citizens is to provide for review of administrative decisions. Agencies make decisions every day which significantly affect our environment, and even the wisest can make a mistake. More importantly, regulatory agencies often acquire the perspectives and values of the regulated, or become too singleminded. When fundamental value judgments—such as parks versus highways—have to be made, there must be a check to insure that the agency has considered all alternatives, and placed the public interest above private interests.

It is useful in this connection to note what the courts have done with environmental suits thus far. Some courts have required that agencies justify decisions, while others have remanded the dispute to more broadly representative bodies. The result in each case is that the court requires the decisionmakers to give adequate weight to the public interest.

Such successes are few and far between, however. Many cases have been rejected out of hand because citizens do not have "standing" to sue administrative agencies. Prof. Joseph Sax of the University of Michigan Law School has written that:

> Our failure thus far to open the way to the development of a common law in this area has been very damaging. In a number of cases, judges have been deeply troubled by complaints put before them, which raised serious environmental problems; but they have felt dutybound to dismiss the cases because they felt the legislature had given them to mandate to cope with environmental problems. This is wrong and should not be countenanced.

We submit that legislation is necessary to eliminate the problem of "standing to sue."

The first requirement is a bill which authorizes the Attorney General, local governmental entities, and private citizens to bring suit when they believe any public or private program is having an unnecessarily harmful effect on the environment. Several features should be included in such a bill. As soon as the plaintiffs have established a prima facie case, the burden of proof should shift to defendant to show that harms will not result. When a decision can affect our life system we must act with utmost caution. If a court finds that the program or product does unnecessarily threaten the quality of environment, it can either order the conduct to stop, limit it to minimize or prohibit its destructiveness, or remand the issue to an administrative agency for further consideration.

STATEMENT OF ARTHUR J. HANSON, PH. D. STUDENT IN ECOLOGY, UNIVERSITY OF MICHIGAN

Mr. Hanson. There are certain environmental problem areas which have become symbolic of man's abuse of the biosphere. Some examples are: The smog of Los Angeles, strip mines in Kentucky, and the destruction of redwood stands in California. In my particular discipline, aquatic ecology, the incredible changes in the Great Lakes ecosystem exemplify changes which are threatening the stability of life in lakes around our Nation and in the oceans which provide essential ingredients of life—oxygen and food.

All available evidence points to continued serious changes in the diversity and abundance of life in the Great Lakes. It is apparent that, as population expands, the problems will be intensified. From past experience we know that inadequate research and just plain dumb decisions have brought about crisis after crisis in the management of resources. There has been a proliferation of agencies responsible for various subsets of the overall management problem.

I would like to bring attention to a most serious situation which has suddenly developed in the world's finest fresh-water research laboratory—the Bureau of Commercial Fisheries' Ann Arbor station. Programs of limnological research, fishery surveys, and ecosystem studies have been carried out by this lab since 1927. In the past, these programs have resulted in the development of techniques for successfully combating the sea lamprey's devasting effect on the Great Lakes fisheries resource, assessing the deterioration of Lake Erie and, most recently, providing information on the impact of pesticides on the chain of life in the lakes. It is no overstatement to say that this laboratory is the most important monitor of the biological changes in the Great Lakes.

In late February, the Department of the Interior made known its intentions to discontinue the work of the Great Lakes region of the Bureau of Commercial Fisheries. Specifically, the Ann Arbor laboratory would be transferred to the control of the Bureau of Sport Fisheries and Wildlife. From within a smokescreen of rhetoric, the Department issues pious, and sometimes conflicting, statements of continuing—and indeed even expanding—the role of the Great Lakes fishery laboratory. At the same moment the Department of the Interior is moving to emasculate the programs of the lab with surgical precision.

Plans call for an immediate reduction of $400,000 and a release of 26 personnel. Starting July 1, 1970, the second phase takes effect: A reduction in operating budget from $1.2 million to $376,000. This reduced budget will finance 15 people, including the janitor, but will provide virtually no funds for research. In other words, vital monitoring of lake parameters will cease. By July 1, 1971, the BCF will have totally pulled out—both money and manpower.

The Bureau of Sport Fisheries and Wildlife will be given the responsibility of assuming present projects, but with no money or personnel specifically earmarked for these purposes. In short, a building shell, filing cabinets, and a miscellany of equipment will be available to the new tenant.

There seems to be a total lack of long-range planning in the decision to transfer responsibilities. Certainly it will take precious years to develop the teamwork and expertise necessary to establish effective data collection. But there is a good probability that the basic limnological and fisheries programs now being conducted by the BCF will never be redeveloped. Traditionally, BSFW research philosophy has tended to focus on immediate problems—the equivalent of "firefighting" rather than "fireproofing."

I am struck by the time scales on which we operate—a few months to torpedo an outstanding research effort, years to rebuild. We cannot take the chance of destroying valuable monitoring programs. Now is not the time for budget cutbacks. If you gentlemen had been on campus yesterday you would have heard a panel of distinguished scientists talk in terms of a few decades before irreversible changes occur in the Great Lakes—not just Lake Erie, but the one by one all the others. At this sea grant-enact seminar on the future of the Great Lakes, a petition was circulated, demonstrating the concern of students, faculty, and citizens of this community on this issue.

STATEMENT OF WILLIAM L. BRYAN, JR., PH. D. STUDENT IN ENVIRONMENTAL EDUCATION, DEPARTMENT OF RESOURCE PLANNING AND CONSERVATION, UNIVERSITY OF MICHIGAN

ENVIRONMENTAL EDUCATION

Mr. **Bryan**. Gentlemen, my name is Bill Bryan. I am a doctoral student in environmental education in the Department of Resource Planning and Conservation at the University of Michigan. I have for the last 4 years been an environmetal education concultant in various school systems in the State of Michigan. My testimony concerns environmental education in the United States with suggestion for its immediate future.

Education directed toward our environment historically has been oriented to resources. In the early 1900's the American Association for Nature Study actively promoted programs aimed at developing an understanding, respect, and sensitivity for the natural environment. Extensive programs in outdoor education with an emphasis on school camping came into the resource education forefront in the 1920's. Its philosophy has focused upon enriching, utilizing and complementing the content area of the curriculum through firsthand experiences in the outdoors. Another and perhaps the most extensive program concerning the environment has been conservation education. It has been aimed at learning the importance of natural resources and acquiring a knowledge to use them wisely.

Today we have extensive programs operating under these three philosophies in our school systems, nature centers, camp programs, and other education areas. A vast multitude of educational programs seem to have a little piece of this "motherhood" pie which resulted in 1966 in approximately $100 million spent on free and inexpensive conservation education materials.

Despite such educational thrusts concerning the environment, we are in the midst of an unparalleled ecological crisis where the environmentally ignorant and apathetic citizen prevails.

As we examine possible alternatives for solution for this crisis, education must become part of the solution, not part of the problem.

To help work toward this objective, a massive infusion of funds alone into present education programs will not be the answer. For certainly there first should be a critical examination of existing programs. Their effectiveness and success has to be seriously questioned in terms of measurable results. In studies that have done just this, somewhat less than desirable findings were identified.

It has been recognized that environmental education programs are rural, rather than urban, oriented; they are resource-centered rather than man-centered; they are more evangelical than ecological; they focus on broad general issues with little concentration on the local or regional level; and they do not stress effective direct citizen action in problem solution. Furthermore, these programs are characterized by tunnel vision rather than an integrated approach. This is exemplified in the earlier publication cost statistics where most material is repetitious and smacks of public relations on the part of "charitable" institutions and corporations that produce most of it.

Today, programs are needed from the preschool years through adult years to produce a citizenry that is knowledgeable about the biophysical evironment and its associated problems, is aware of how to be effective to solve these problems, and is motivated to work toward their solution. Such programs have to be relevant to the learner, emphasize the process of problem solving, insure that the learner plays an active role in the learning process and be dedicated to probing of the unknown rather than the known. They must also have a basic ecological foundation.

Other, and perhaps more fundamental limiting concerns, must be raised concerning past and present environmental education programs. In order to work effectively toward a high-quality environment (which economist Kenneth Boulding portrays as "one with a goal of maximizing the amount of individual freedom and creativity which can be attained within the limitation of a socially controlled spaceship society"), there have to be sweeping fundamental changes within our social system. Education programs cannot alone institute the immediate changes that are needed. Much will have to come from new legislation, policy changes, the creation of new institutions, and a complete redefinition of our present value structure. Furthermore, I seriously question whether environmental education programs, if stuffed into our existing educational framework, will have any value at all. I seriously question the rationale of injecting a program advocating change into an existing system that has failed in its role of producing a generally useful citizen in terms of his resposibilities and contributions to the total system of which he is an inseparable part. School systems are where the generation gap is most evident and are where there is a great stake in indoctrination of the status quo and in imposing values of the past. The curriculum is characaterized by a lack of student involvement, relevance and opportunities for innovation. It suffocates creativity and the dynamics of change—all of which must be an essential part of an effective environmental education program.

I seriously believe that if environmental education programs were incorporated by the existing formal education system of today, they would be doomed to failure. No matter how rich the stuffing, you cannot revive a dead bird!

The proposed Environmental Quality Education Act (H.R. 14753) introduced by Representative Brademas in the House and the almost identical Senate bill 3151 introduced by Senator Nelson in the Senate have been hailed recently by various educators and politicians as much needed steps in the direction of high quality and more prolific environmental education programs in the United States. I do not concur.

Both bills are too broad and pervasive. They do not identify a specific strategy or plans for such a strategy that would allow the effective implementation of environmental education programs. They do not even identify a basic conceptual philosophy from which programs should be generated. There is no mention of funding or how such funds if available would be allocated. Certainly if the bills were to pass with only minimum financial support authorized they would be of little significance. No mention is also made concerning appropriate funds available to finance a full-time staff that is essential to properly conduct a program along the magnitude which is needed.

I believe that either a substantal revision of the existing bills be undertaken or a new bill be submitted if we wish to develop the type of environmental programs that are needed. Such an act should call for a task force much like the Outdoor Recreational Resources Review Commission which can spend full time with appropriate financial resources to define the basic underlying concept of environmental education, identify goals and objectives of environmental education programs, and map out a strategy for implementation. Members should not only include prestigious types from relevant areas of expertise, but also an equal complement of students.

2.

I also propose that such a bill specifically request the task force to devote its energies to the unknown. Environmental education programs where teachers are taught that creativity, problem solving with students, and the constant probing of the unknown are of paramount importance; education programs where environmental education is the core philosophy of the curriculum; and education programs characterized by the emerging storefront schools, paraschools and other innovative structures that are outside the solidified framework of the traditional school system. Efforts and programs reflecting this thinking must also be developed at the university and teacher training level as well. Specifically the concept of the free university should be analyzed.

Maybe one might think this is too tall an order. However, immersed in a crisis with survival at stake, we must be sure that we focus our efforts as innovators of change and not as another rancid ingredient of the known. Hopefully, environmental education bills in the immediate future will reflect this essential type of thinking. Thank you.

Mr. REUSS. The subcommittee will now stand adjourned.

(Whereupon the subcommittee was adjourned.)

THE ENVIRONMENTAL DECADE
(Action Proposals for the 1970's)

FRIDAY, APRIL 3, 1970

House of Representatives,
Conservation and Natural Resources Subcommittee
of the Committee on Government Operations,
Washington, D.C.

The subcommittee met at 10 a.m., in room 2247, Rayburn House Office Building, Hon. Henry S. Reuss (chairman of the subcommittee) presiding.

Present: Representative Henry S. Reuss.

Staff members present: Phineas Indritz, chief counsel, David B. Finnegan, assistant counsel, and J. P. Carlson, minority counsel.

Mr. **Reuss**. Good morning.

The Conservation Subcommittee of the House Committee on Government Operations will be in order for the third of a series of hearigs on "Action Proposals for the Environmental Decade of the 1970's."

We began our hearings in February, following a call last December for the environmental decade in which more than 80 Members of the House of Representatives joined with all the members of this subcommittee.

Our opening hearings in February ran for 5 days, during which time the representatives of various conservation, architectural, planning, and public health groups testified.

Then, on March 13 we held our second hearing in Ann Arbor, Mich., at the University of Michigan's environmental teach-in.

We are delighted to have with us today—at what I am sure will be a very lively and thought-provoking hearing—some of the newer voices who are speaking out on environmetal problems.

It is a source of great encouragement to me that just when the people of this country are beginning to fully realize the need for taking steps to preserve our environment, there is a potpourri of young people with idealism and energy who wanted to do something about it, and it is fine to have representatives of that group here this morning.

The witnesses who appear here this morning are Mr. James W. Spensley of Washington, who is president of ENVIRONMENT! in Washington, D.C.; Mr. Harold E. Barcey of Gainesville, Fla., of The Balance Fund Foundation; Mr. R. Doyle Grabarck of College Park, Md., of the North American Habitat Preservation Society; Mr. David B. Kenyon of Washington of the Committee for Ecological Responsibility; Mr. Doug Scott of Ann Arbor, Mich., who was coordinator of the University of Michigan Environmental Teach-In, but who was so busy coordinating he didn't have a chance to testify at the subcommittee's Ann Arbor hearing; Ben Shaine of Ann Arbor, Mich., representing the League of Conservation Voters of Friends of the Earth, Inc.

I believe we have statements from every one of you men, and under the rule and without objection they will be incorporated in the record.

I am now going to ask each one of you to present his material, either by reading his statement or by going beyond it.

I would like to have you shoot at taking not more than 7 or 10 minutes, but we don't actually have a stopwatch out this morning, and after the presentations we will have some questions to ask.

I should say that we set this date, Friday, April 3, for a hearing, knowing that many of you would have to be in Washington anyway that weekend and we wanted to accommodate your travel schedule. We didn't know at the time that—the hearing was set some weeks ago—that the Congress would be in recess at the moment, and, therefore, I convey to you the greetings and apologies of my fellow members of the subcommittee for not being here. They are all back in their home districts, and while they regret very much not being here, they did find themselves involved in other commitments. However, we are fortunate to have here the top staff people on both the majority and minority side, Mr. Indritz, subcommittee staff counsel, and Mr. Carlson, overall minority counsel for the full Committee on Government Operations, who will join in asking such questions as occur to us.

Mr. Spensley, would you start out?

Mr. **Spensley.** Mr. Chairman, first of all, I think we submitted testimony from Mr. Phillip M. Sims of Santa Clara, Calif. I would like to include that in if it is possible. He was an alternate.

Mr. **Reuss.** Without objection that will be included.

(Mr. Sims' prepared statement follows:)

Prepared Statement of Phillip M. Sims, School of Law, University of Santa Clara, Santa Clara, Calif.—"Making Public Agencies More Responsive to Environmental Programs: Four Recommendations"

I. Provide legal aid and facilities to individuals who have a complaint against an administrative agency or official who is charged with protecting environmental assets.

In recent years there has been a growing awareness of the individual's need for legal counsel even though he is financially unable to afford such counsel. There has been created the federally funded Committee for Rural Legal Assistance; the development of the public defender program at the county level; and the numerous neighborhood legal service programs. These facilities have not been limited to criminal matters. The new services have been extended to provide civil legal protection as well.

The concept of providing legal services should be expanded to allow individuals who have a legitimate complaint against the nonfeasance of misfeasance of those charged with solving environmental problems. If all of the people have an effective means of "prodding" agencies and public officials to do their duty, the sensitivity of the responsible people might improve rapidly.

With legal aid more readily available to special interest groups, the small group or band of individuals has a limited opportunity to challenge the agencies in court. The special interest group who has bountiful legal counsel may challenge at any time. The ad hoc group is not so privileged.

The Sierra Club, the Environmental Defense Fund Inc., and others are trying to use the courts to protect the environment, but they are quite limited when put against oil companies, automobile manufacturers, municipalities, administrative agencies, and unresponsive public officials.

II. There should be a periodic public review of agencies and administrative programs that are designed to protect the environment.

The function and purpose of an administrative agency is to carry out the numerous day-to-day operations of a legislative program enacted by Congress or by another legislative body. Congress has the ultimate responsibility but the agency does the acts which have the immediate effect on the people and the environment. Too often, however, the agencies and boards become indifferent to their proposed purpose—serving the people—and become a protector of the group or organization the agency has been designed to regulate.

The purpose of a periodic review, not limited to budgetary sessions, would be twofold.

First, the agency would be put on notice that its actions would be under scrutiny at all times. As the situation now exists, an agency has free reign as to policy decisions. These policy decisions may not be the congressional mandate that was given to protect the environment. With a periodic review an agency would be alerted to the possibility their regulations would be reviewed.

Second, the public would know when the reviews are scheduled. The periodic review would allow individuals who feel they have a justified grievance time to prepare a case for or against a particular agency. There would be no costly "exhaustion of administrative remedies" or "judicial review," and the Congress could readily determine if the legislative program is being carried out. Most important, however, the agencies would become more sensitive to the needs and wants of the people and their elected representatives.

III. Membership of public agencies and advisory boards should include people from all groups. The regulated group should not dominate the membership.

An agency is created to control, regulate, supervise, or protect someone or something. In the case of the Federal action, Congress has determined there is a need for action or protection. The administrative agency is the means used to act or protect.

Yet, on the local, State, and Federal levels, the very groups that are to be regulated are in command of the agency. Either serving as commissioners directly or in advisory roles.

At the local level of city and county planning, land developers and landowners sit on the planning commissions and boards and regulate the zoning and land-use patterns of the area under their supervision; at the State level, oil, chemical, auto manufacturers and others sit in advisory roles to regional air pollution control districts; on the Federal level, people directly connected with radio and television interests sit on and control the Federal Communications Commission.

The argument that allows such conflict of interest is based on the premise that these groups are the only ones who have sufficient "expertise" to deal with the problems involved.

The commissions, boards, or administrative agency advisors need make only broad general decisions. A competent staff will be able to inform the officials of the problems involved. The staff needs the expertise, not the persons making the policy decisions or regulations.

A rule should be enacted that would disallow an administrative agency or public boards to have more than fifty percent (50%) of its membership to be composed of persons from the industry or group that is to be regulated.

IV. There should be direct elections of administrative officials that deal with the environment in limited geographic regions.

The past decades have been a tremendous proliferation of public agencies and administrative bodies. These boards and agencies have become major political forces within themselves. They control and regulate many of the more important functions; yet they are not directly responsible to the people. They are divorced by the "buffer" that exists between them and the people—namely, the legislative body that created the agency. As such they are allowed to act "independently" which at times tend to be in direct confrontation with the wishes or best interest of the citizenry.

One of the most important and significant ways the people have of controlling legislative programs is through the ballot box. In the present climate people are aroused and interested in the protection of their air, water, and all other natural resources. However, the protection is often relegated to some official who feels no obligation or "political pressure" to respond to the demands of the people.

In many cases, at the local and State levels, the commissions and boards are directed by elected representatives—but elected to other positions. The position to which they are elected may not be related to the position they occupy on an environmental commission or board.

Direct election of regional boards and public administrators would allow the people to have some more direct control over the decisions the boards make. Members of the House, Members of the Senate, and the President of the United States are sensitive to the demands of the people. Administrators and public agencies should be made just as sensitive.

One method of using the power of the courts to make a public agency more responsive to environmental problems.

In 1955, the California Legislature created the San Francisco Bay Area Air Pollution Control District. The district was charged with the duty to control and regulate air emissions from stationary sources within the 6-county region. Until recently the board acted almost as a phantom organization. There was very little regulation or control being done. Variances were given quite freely without any criteria ever being made public. The names of violators were kept a secret. The justification being that such information would be a breach of confidence as the name and a description of the material put into the air was required to be made when the violator was made known. The breach of confidence argument goes to the fact that the information of types and quantity of pollutants put into the air was given freely by the industries involved. Although the State law required such information to be given and the California Public Records Act of 1969 made such information a public record.

Three law students from the University of Santa Clara Law School, Phillip M. Sims, Wiliam Bassett, and Derek J. Simmons, instituted a suit for a writ of mandamus against the board for their failure to do their job as required by law; to make the names of polluters and types of pollutants involved public. The board has been in a very familiar role with regards to other boards that are supposed to regulate or control environmental insults. The board has become a protector of the industries it was charged to regulate.

It is only now beginning to realize that its first and primary duty is to protect the people from the pollution; not the polluters from the people.

The significant factor in this case is that the law was used to protect the interest of the people; not as a shield to protect violators.

The law is available but more money is needed for such projects; and more people must be encouraged to enter litigation to protect the natural resources that are so limited.

STATEMENT OF JAMES W. SPENSLEY, PRESIDENT, ENVIRONMENT!, WASHINGTON, D.C.

Mr. SPENSLEY. I want to thank the subcommittee, first of all, for giving us the opportunity, particularly you, Congressman Reuss, to talk today. I think you introduced the people, so I will begin.

I think the environmental problems of our society have probably been better expressed and more adequately supported by more of the qualified participants in this hearing than I. I think my testimony today will focus upon one primary consideration. That consideration is the perspective in which most citizens and Members of Congress consider the environmental problem.

It is perhaps trite to suggest that the environmental problems of this society will not be solved by money alone. Rather, the environmental problems of our society are a complex combination of social, political, economic, and population considerations. For any commission or committee to investigate the solutions to such problems without viewing these factors in perspective would be like cutting out the cancerous growth without treating the malignant infection. The malignant infection is, I believe, our set of values that reflect negligent disregard for the environment in which we live. This country, and indeed this Congress, will never consider the alternatives to a "better life" until we understand that the "better life" is not uncontrollable economic gain, political prestige, more plastic cups, faster automobiles, and SST's, but rather population control, recycleable materials and products, and man living in harmony with his fellow man and nature.

My suggestions for Government action would revolve around the alternatives of facilitating greater information access to private individuals and organizations, increased awareness and participation by the Congress in environmental affairs, and greater latitude in allowing citizen participation in cleaning up our environment. I would suggest that this subcommittee consider the following recommendations in this emphasis:

1. The Congress should consider the feasibility of developing, through special task forces in HEW, Interior, and other Government agencies, a consumer report listing preferable products for the President's Environmental Quality Council to be published for use by the consuming public.

2. The Congress should authorize educational and research grants to be administered by the Office of Education in HEW, to encourage private research and education concerned with environmental problems.

3. The Congress should consider the creation of a new division in the Justice Department, similar to the Civil Rights Division, to pursue environmental litigation or explore the possibility of added jurisdiction to the Land and Natural Resources Division.

4. The Congress should authorize citizen class suits through the courts for damages caused by industrial, government, and private corporations' negligent actions.

5. The Congress should create a Joint Committee on the Environment to facilitate lateral concern and perspective solutions.

6. The Subcommittee on Conservation and Natural Resources—this subcommittee—should initiate investigations into the social and economic costs of proposing environmental legislation in limiting population, consumer power requirements, and overall consumer consumption.

I would also like to submit for inclusion in the record a copy of "Progress Means Pollution: An Idea Whose Time Has Come—And Gone," written by Frank M. Potter, Jr., executive director of the Environmental Clearinghouse in Washington.

I think Mr. Potter's article represents in my mind perhaps a better evaluation of the problems we face in looking for solutions of this environmental neglect, and there I would like to end my testimony which is perhaps short and concise and would rather leave it that way and answer questions on those proposals.

Mr. Reuss. Do you have a copy of Mr. Potter's thesis?

Mr. Spenseley. I will make that available to you.

Mr. Reuss. Without objection it will be made a part of the record.

(Note.—Mr. Potter's article, which was prepared for a conference at the Center for the Study of Democratic Institutions in Santa Barbara, Calif., April 19–24, 1970, is reprinted as appendix 4 of this hearing record.)

Mr. Reuss. Thank you, Mr. Spensley. Mr. Barcey?

STATEMENT OF HAROLD E. BARCEY, GAINESVILLE, FLA., REPRESENTING THE BALANCE FUND FOUNDATION

Mr. **Barcey**. I am certain that the distinguished gentlemen of this subcommittee recognize the magnitude and ramifications of our environmental crisis. With our time limitation, then, I would like to concentrate on two thoughts.

The first is that we must not ourselves, or let the public, become so overwhelmed with the environmental dilemma, that through inability to assimilate the problem, we fail to act. We may work through current legislation such as increasing the territory under the wilderness system. We may modify current programs—for example, eliminating the oil depletion allowance or totally restructuring our welfare programs to emphasize the dignity of the individual. If now it is politically difficult to deemphasize the quantity of life, let our programs stress its quality. The welfare programs should not include a guaranteed annual income, for this would undercut an individual's self-respect. But it is necessary that welfare programs include an organ enabling the recipient to work his way off of the welfare rolls above the poverty line.

Again, these people must receive a considerably larger amount of money than they do. But a man should also be required to have his children in school and participating in work-training and basic education programs himself. The welfare program should have a certain time limit on the period it may be enjoyed, a period long enough to enable a man to qualify himself for a job in the business world.

Revamping old programs will not replace the need for new ones. There is little doubt that Senator Packwood's bill falls short of our country's requirements, yet it is considered controversial. I believe that this subcommittee then must suggest pragmatic, generalized recommendations, acceptable to all today, and providing the basis for concrete action in the future. Specifically, the President should establish a Cabinet-level post of Population and Environmental Control—something simple to initiate, palatable, and the basis for handling the conservation problems as they grow in the next years. Senator Nelson's proposed amendment to the Constitution guaranteeing every citizen the right to a decent environment would immediately provide the opportunity for challenges through litigation. Yet the enactment of this amendment would again be relatively noncontroversial. Lastly, a federally sponsored, State-administered, inventory of our natural resources should be taken and kept up to date, such that, when the mandate for change comes, we will have the information ready to initiate it.

The second point I would like to stress is that the environmental dilemma will displace some workers, but will in the long run provide at least twice as many jobs of a higher quality. For to eliminate pollution, which is a measure of exploitation and our disbalance with nature, will require researchers and technicians in a field never before tapped by the labor market. Since everything produced must be recycled, it follows that roughly the same number of men will be needed for recycling as for production.

Since at which point we balance man and nature is dependent upon our population, zero population growth must become our Nation's official goal. But the number of doctors alone needed to work in the family planning clinics our country requires cannot be provided by today's colleges. Thus, the clue to America's legislative needs lies in producing programs to develop the other half of our economy—the half returning resources to the planet.

I sincerely believe that a revolution, structural changes, in society are imminent. For we enjoy a false population size, a false standard of living, and a rate of progress. A false population size will be reduced by millions of deaths. The false standard of living is a temporary standard of living that will drop modern man into the greatest depression he has ever known. The false rate of progress will produce unprecedented physical discomfort, and mental frustration for the mass of our species. Physical pressure on frustrated individuals will produce people anxious for change—revolutionaries. We must establish a new legitimacy for public policy—not majority support of the people, but congruency with the laws of the universe. For modern man has never been in balance with nature, and every major problem he has is a direct result of this disbalance. Americans took the leadership of mankind's revolution for freedom on this planet. But man cannot be truly free until he is in balance with his environment. I consider the revolution not a threat but a hope. I point out to this subcommittee that old political ideologies which held no ground because of our country's economic stability will soon have another chance to win popular political control. As rational men, we are forced to a test of sincerity, to rebuild and modernize the house of government before it falls. To be an enemy of the inevitable is a guarantee of defeat.

Mr. REUSS. Thank you very much, Mr. Barcey.

Mr. Grabarck?

STATEMENT OF R. DOYLE GRABARCK OF COLLEGE PARK, MD., REPRESENTING THE NORTH AMERICAN HABITAT PRESERVATION SOCIETY

Mr. GRABARCK. I was going to follow my text, but I would like to deviate a little bit from it except in certain spots.

First of all, I would like to thank you for having invited us to participate here today, but I would like to add that I am depressed by the fact that it was scheduled at a time when all the representatives of the subcommittee are not present. It perturbs me to find that my advice is not worth the hearing of my representatives in Congress.

Mr. REUSS. What was that again?

Mr. GRABARCK. I am depressed that my advice is not considered worth while enough to have your full subcommittee to hear it, and I also believe——

Mr. REUSS. Didn't you hear my statement?

Mr. GRABARCK. Yes; they are home campaigning—Congress is recessed.

Mr. REUSS. Didn't you hear me say that this hearing was scheduled to meet what we thought was the convenience of the witnesses because we had been told they would be in Washington this weekend anyway. It was not until after the hearing had been scheduled that a recess—which as I say had not been envisaged—was declared. I, therefore, don't think that my colleagues who are not here should be censured. They would very much liked to have been here.

Mr. **Grabarck.** I would have inconvenienced myself on the part of environment; I have done so for several years.

Mr. **Reuss.** Anyway, you have got me, so go ahead.

Mr. **Grabarck.** First of all, I think we are making a serious mistake. This environmental issue has been taking place for several hundred years. It has only been recently that Congress has jumped on the bandwagon and I don't know whether it is good or bad, because I feel what is going to come out of it is a lot of disastrous effects rather than salutary ones.

We are radically passing laws to placate the public. They will hurt a lot of people—namely, the little businessman who will not be able to conform to these regulations.

But first of all, I think if we are going to do something, it is going to take not the white paper report that we have had in the past, but some good, firm, concrete action and a real interest—not this fleeting, ephemeral interest we are witnessing right now and won't be hearing much of it next fall.

Rather than belabor this point, I would like to go to my recommendations. One of these recommendations is for a business-environmental research center. Last November (regarding the immediate need of this particular type center), we wrote to O. N. Miller, head of Standard Oil of California, suggesting the business-environmental research center idea to his company. His reply to our proposal was that they (his company) were doing all under God's power to work on the environment so that future generations would have a decent environment in which to live. I wish to point out that it was well known to us at this time that there were many malprocedures going on at one of its subsidiary company's (Chevron) oil wells on the gulf coast. Recently I sent Mr. Miller copies of his past letter with an accompanying letter, and I believe that Mr. Miller will not be able to refute the fact that a national business-environmental research center, not governmentally-controlled, is an absolute necessity.

Recommendation two: This Nation is based on business, and despite the fact that many of my colleagues won't agree with me here today, we must protect our business, but we must also protect our environment.

I am of the firm belief that, if Congress would approach this thing logically and not just attempt to influence the public for votes, we could have a business-environmental research center, we could protect our environment, we could have the necessary laws to do this, and we would not injure our business.

I think this is an extremely important consideration. If we start damaging our business at the same time as we are supposedly protecting our environment, we are going to find ourselves in a very serious situation.

Again, I state that any new laws which are put into effect should be aimed at future development of this country. Old laws should be rigidly enforced but where their enforcement has a severe effect on the survival of our smaller business complexes, long-term, low-credit loans should be made available so that our environment can be protected with planned approaches rather than a cure worse than a disease.

In this point I bring out that had the Federal Government taken its responsibility to carry out the necessary research in the past on environmental control, instead of ignoring this problem, we would have had the environmental pollution abatement devices at low prices, so that they could have been installed on industrial plants.

But it was the blatant lack of responsibility on the part of both houses of the Congress that brought this about.

Recommendation three: The Atomic Energy Commission, the Army Corps of Engineers, the Forest Service—and I made a mistake in my submitted statement: The Forest Service is not being placed in the Department of the Interior; it is supposedly going under a Division of Natural Resources—the Department of the Interior, the Commerce Commission, and to this I would like to add, the Bureau of Land Reclamation, should be either revamped or dissolved and replaced by more functional agencies.

As I stated in my submitted testimony, I would be more than willing to amass a list of about 2,000 instances where they—the agencies—were antagonistic toward each other, and even within their respective agencies, and where the detriment of the environment was the result.

I only point to the Interior Department, for example, using 1080 (sodium monofluoracetate). Compound 1080 is one of the most lethal in present usage. It is being employed for predator control in States where predator control is not a necessity, and all by the U.S. Department of the Interior. As to the Army Corps of Engineers, I would like to point to Senate Document 97, passed 1962—it is a real joke—that employs economic practices for justifying the cost-benefit ratio actions of the Army Corps of Engineers which have been refuted by most of the major economists in this country.

I also point to the 1936 Flood Control Act, which states, "to whomsoever they may accrue"—namely, the cost-benefit ratio. This has been ridiculous at some times, and is a particular act that ought to be reviewed. In the 1899 Rivers and Harbors Act is another law which should be looked into since the nebulous wording of the law has caused more trouble than it has good.

To substantiate this, I point to a document which you yourself have reviewed—it was the 21st report by the Committee on Government Operations, entitled "Our Waters and Wetlands: How the Corps of Engineers Can Help Prevent Their Destruction and Pollution."

Recommendation 4: Since the major source of our problem and the world problem is our burgeoning population, I believe this country is guilty of having been totally lax in initiating any type of population control. We have been afraid to approach the problem because of the influence of certain churches. What is happening here? Copulation with a resultant childbirth is a luxury, yet I am being forced to pay for it. I am a single person and am being nailed for taxes to pay for other people's luxuries. I don't mind paying for education—I uphold that—but when people copulate me out of my testimony, it perturbs me.

Recommendation 5: I believe that environmental educational units and mass education programs, in order to bring a knowledge to the student of his relationship to the integrated natural system, should be implemented.

I read fantastic educational articles put out by the Department of Education of the U.S. Government Health, Education, and Welfare, but they still show me pictures from 1940 and 1930—this is great, but it is not applicable. How can you apply a farm environment to a inner-city child? These programs must be developed on an urban, suburban, and country style. They are not. Our educators have been totally lax in doing this—all you have to do is review the educational documents. I also believe, as Mr. Barcey stated, that another major problem of this country is the lack of enthusiasm of the American people to want to really work. We have got to get them involved, and that means setting up something very similar to what was called the WPA—I think it was the WPA system that was implemented back in the depression which sent people out to build up various areas and paid them for this work. It gave people self-respect to work for a dollar rather than be given a dollar.

Recommendation 6: Unfortunately, with our current trends, I am reminded of the young man who looked at the eagle above the American flag and said that they would have to replace the eagle with a bulldozer and a dollar bill—the problem of environmental protection in our developing technological era is one of our most important issues for the survival of his country and most probably for the survival of the human race. The controversy concerning the methods we should use in fulfilling this need will be salutory in the long run if it effectively awakens the public as well as the local, State, and Federal officials to their responsibilities for tackling the whole range of environmental problems that we face today. I feel that if we do not do something for this country right now to preserve its natural environment, that this is the greatest act of treason against this country.

(Mr. Grabarck's prepared statement follows:)

Prepared Statement of R. Doyle Grabarck, President of North American Habitat Preservation Society, and President of Grabarck Enterprises

I appreciate the opportunity to appear today as a private citizen concerned with the disastrous environmental impact caused by our rapidly exploding population and our expanding uncontrolled technology. Before coming here I received a list of eight questions to which it was suggested that I direct my comments. The eight questions are so broad that they would take a task force of specialists with capabilities greater than I possess to answer them and the answers would be so voluminous that begging injury to your pride, none of you would have either the time or the patience to read.

A major problem when speaking of environmental degradation is the ability to separate the apparent problem from the true problem. A common source of error on the part of Government and industry in the prevention of environmental damage has been a lack of broad-based study of all interrelationships of planned projects and thus the true feasibility with regards to overall damage to the environment or the individual citizen has not been researched. In many cases alternatives were never considered and such narrowness of approach has widened the chasm for the possible creation of a system of shared values by which the Government (State and Federal), the road builders, the oil companies, the paper companies, smaller businessmen, and even the trade associations could communicate with an enlightened citizenry. As long as we continue to maintain our white paper scientist rhetoric and our political jump-on-the-bandwagon, most governmental agencies that do not understand the environmental problems will commit themselves to solve something that is impossible to do with the money they have at hand. We are playing an extremely dangerous game, gentlemen, that will have disastrous effects for all citizens of this country and perhaps the world, and I term our past and current action the greatest single act of treason against this country.

One of the most serious results of the current citizen-environmental activism in recent months has been a political vote-getting overreaction by Government. Without proper study, laws designed to placate the public and win political advantage have been introduced and passed in many State governing bodies and are being introduced and passed in our Federal governing bodies. The majority of these laws will not serve to protect the environment but will have detrimental results for our private business complex. The Government, in an attempt to cover up its blatant bureaucratic inefficiency in the past, is passing laws with requirements for environmental controls that will be impossible to meet by all except the larger industrial complexes. The smaller businesses on which many individuals have worked a lifetime to establish could conceivably be eliminated from the competitive market or just forced to close down operations.

What we need are stringent laws to cover the planned placement and construction of proposed new operations. Government must, as it has not done in the past, endorse and subsidize research by private independent companies (closely watched research to prevent misuse of funds) on environmental control devices and planning. Such research would guarantee us efficient and more economically feasible devices for pollution control and abatement. If we are to carry out the letter of the law on some of the insane and repressive legislation that has been proposed, then I believe we should be prepared to subsidize, with long-term, low-credit loans, smaller businesses which cannot possibly make the required changes in their operations within the time deadline.

By these laws we have created a large corporation trust and a political power structure which eliminates consideration for the needs of the American people and of our free enterprise system. Legislators in this country are avoiding the demand for a comprehensive study and by their selfish overreaction to protect their political stature; they are in my opinion inviting greater calamity to our country as a whole. It is not new laws that we need, but the proper enforcement of existing ones. It is not political merry-go-round that we need, but a concerned, well-ordered, well-financed, independent nongovernmental, non-white-papered study of approaches (with immediate action following) to the alleviation of our hazardous environmental circumstance. Agencies such as the much disputed Atomic Energy Commission, the ill-ordered, ill-planned Army Corps of Engineers, the lumber industry controlled Forest Service, and the bipolar internally antagonistic Interior Department must be revamped or totally dissolved and replaced by more meaningful and communicative agencies. I could run through at least 2,000 reasons and examples of the lack of cohesive action within and among these agencies, but I am sure my dissertation would only be a redundancy of things that you have read over and over in other publications.

Although I could make an extensive and indepth list of recommendations in this very brief report, I believe that recommendations are only as good as their eventual implementation proves them to be. Over the past few years we have had thousands of recommendations which when publicized and twisted in context have served to narcotize the American public into believing that something is actually being accomplished when the marginal utility of the projects undertaken thus far could be calculated as a two based on a possibility of 10. Below is a very brief list of some of the things we should undertake and since I am an extremely brilliant organizer with high capabilities of dealing both with the business and scientific needs of this country, I offer my services to my country when the diarrhea of the mouth is terminated and the positive goal-oriented action begins.

We must if we are to protect our internal stability and create a healthful environment undertake the following. (Each one of the following suggestions I can expound on in great detail but in the token period of time we young activists have been given, it is impossible to do justice to any of them:)

1. We must, as the North American Habitat Preservation Society strongly suggested 2 years ago and proposed to 200 major corporations in the country in the past year, create a National Business-Environmental Research Center. It has become increasingly apparent that environmentalists and businessmen are more content to find things on which they disagree rather than on things on which they agree.

2. Any new laws which are put into effect should be aimed at future development of this country. Old laws should be rigidly enforced, but where their enforcement has a severe effect on the survival of our smaller business complexes,

long-term, low-credit loans should be made available so that our environment can be protected with planned approaches rather than a cure worse than a disease.

3. The Atomic Energy Commission, the Army Corps of Engineers, the Forest Service (now being placed under the Department of the Interior), the Department of the Interior, and the Commerce Commission should be revamped or dissolved and replaced by more functional agencies.

4. As the major source of our problem and the world problem is our burgeoning population, we must take the lead in population control research and the updating of our own population laws. The tax structure should be, as justice demands, changed in favor of the single individual and the childless or two-child couple. Copulation with resultant childbirth should be considered a luxury and not be made the responsibility of those not having children to pay.

5. Environmental educational units and mass educational programs, in order to bring a knowledge to the student of his relationship to the integrated natural system, should be implemented. The programs for efficiency's sake should be subsidized by the Government but developed by conservation organizations.

6. Meaningful involvement in our society is enhanced by working to bring about necessary changes. We are faced not with an unemployment problem but a lack of enthusiasm to work amongst the American populace. Since we have much replanting, relandscaping, and cleaning up of our roads, streams, and rivers to be done if we are to pay out living wages to people who do not work, then utilize the untapped labor force as a possible means to begin to clean up this country.

The problem of environmental protection in our developing technological era is one of our most important issues for the survival of this country and most probably for the survival of the human race. The controversy concerning the methods we should use in fulfilling this need will be salutary in the long run if it effectively awakens the public as well as the local, State, and Federal officials to their responsibilities for tackling the whole range of the environmental problems that we face today. By our meeting today and the action that shall be resultant of these meetings, you as legislators and I as a scientist, businessman, and citizen shall either gain the name of patriots or earn the enigma of tratiors.

Mr. Reuss. Thank you, Mr. Grabarck.

Mr. Kenyon?

STATEMENT OF DAVID B. KENYON, REPRESENTING THE COMMITTEE FOR ECOLOGICAL RESPONSIBILITY, WASHINGTON, D.C.

Mr. Kenyon. I want to say first that our group appreciates very much the chance to appear before you.

I would like to address myself to one specific failure that our group has found—a group called the Committee for Ecological Responsibility—and then go to what we think might be one specific solution.

I know there are many possible subjects, but I would like to talk about these two. Our group was formed in response to the crisis in the environment, but it was formed also specifically to deal with what we considered to be an enormous threat posed by the Alaskan pipeline system.

After an investigation, what we found was another example of a Federal agency's failure to effectively regulate a powerful industry.

I am going to read a part of the statement now, and then deviate.

The three oil companies involved filed for the necessary land permits with the Department of the Interior in June of last year and asked for a response by July—a response permitting the construction of a hot-oil pipeline across 800 miles of very delicate land. The Department of the Interior found itself unable to comply with the request within a 30-day limit, but chose rather to delay the permits until studies of the problems could be made available and all interested parties heard. However, the studies available now, including the Geological Survey's "Report on the Thermal Effects of a Heated Pipeline in Permafrost," and the "Preliminary Task Force Report," deal with the problems involved, and not with solutions. As stated in the Geological Survey report—and I will just summarize this quote—the report deals with problems, that the solutions are not yet apparently in sight and there is a great need for further research and essentially delay.

The Department of the Interior's response to the problems outlined by the Geological Survey and the task force has been to draw up a list of stringent stipulations which are to insure that the environment is protected and which retain power in the authorized officer to inspect all phases of the project, and to suspend or terminate such activities when the provisions of the permit are not met.

But as Russell Train stated in testimony before the Senate Committee on Interior and Insular Affairs, October 16, 1969:

> Inherent in the content of these stipulations is the recognition that the complex and interrelated problems—particularly the technological and environmental—have not been completely solved.

We are not, of course, experts in the engineering problems involved here. But where virtually all the major conservation groups in the country have called for a delay; where the pertinent Government reports indicate that the problems are known but that the solutions are not; and where the chairman of the task force states that environmental difficulties are yet to be resolved, it occurs to us to ask why it is necessary to go ahead at this time. It appears that industry has once again created a momentum, all but irresistible, and that Government has been unable to maintain an effective countervailing force.

Mr. Train stated in the same testimony, following a discussion of the stipulations—and again I will summarize it.

He speaks of the equal importance of providing effective supervision. And in an August 12 statement he reemphasized the need for supervision; the need to have people who are qualified and are able to see that environmental factors are fully considered.

Everyone recognizes that stipulations are not enough, that we need supervision, but we do not know exactly where the inspectors are going to come from.

In a March 26, 1970, article in the Journal of Commerce it was reported that the Interior Department:

> Wants to double its Gulf inspection force from 17 to 34 and has requested money to hire new personnel from the Budget Bureau. The entire Department has only 25 inspectors.

It appears that, No. 1, there is not enough information, and No. 2, there is not enough money available to hire the inspectors. So there just isn't a satisfactory situation here, and it appears likely that the Department of the Interior is going to go ahead and grant the permits.

At the same time our group found what might be a conceivable way to solve problems like this, and that is a new Council on Environmental Quality.

I am just going to summarize what I have to say on that briefly. We see essentially three functions there. One is coordination and dissemination of information to the public.

I might say there, Mr. Chairman, that I think that your efforts with the 1899 Rivers and Harbors Act is the kind of thing that we would like to see the Council do—perhaps codify the laws, make them easily available so that a person interested doesn't have to go around to all the various agencies involved, but can go to one place and find where there is a solution.

I think that certainly in Wisconsin they are going to know there is such a law, and that the people are going to know that they have a remedy.

Of course, there are problems in interpretation and getting the responsible agencies to act.

The second function of the Council should be a review and coordination of agency action which has environmental impact. Here I might say that they could review things like the pipeline, and hopefully they will. And they should also look into problems that we have had in Louisiana where obviously we have not had enough inspections.

Third, they can advise the President with the annual report on "the State of the Environment."

I think that this bill has essentially two effects. One is to create another agency which is essentially another type of review, and there is a general feeling that agencies in this country and in Washington are just not able to control or to effectively regulate.

There are doubts that the creation of another agency is going to be able to do the job. So, although there is the one aspect of creating a watchdog, the second one I think is more important, and that is to create a body which will give the public information.

And here I might add there is a requirement that agencies submit programs for review, and that is a stipulation or a proviso in the bill which has already been used in a suit now pending by the Wilderness Society against the Interior Department.

This is the kind of tool I think that the Government should be able to create which will allow citizens to protect the environment themselves.

That is the second point that I think is crucially important. In setting up the Council, and I think it is still being created, I think it is very important that the Congress watch the type of development that does go on.

There are several things I think are important in this regard. One is the avoidance of the type of conflict that results from inconsistent goals. As an example, I think the Bureau of Land Management is a good one. They have in the development of their lands or their function several things that they are supposed to do. Among them are conservation or development of the recreational aspects, and two and three might be resource or mining or industrial development.

These things are inconsistent and oftentimes it seems that giving one agency all functions and all considerations does not work out. They tend to get a confusion of roles and neither side is really protected.

So, we hope there that the new Council would be dedicated especially to the conservation interests.

Again the second point is that the staff should be the same. It is difficult to find people who are experts who have not been involved on the side of industry; but I think it is important to recognize the relevance of the professional background of a person so that he will lean toward conservation instead of having what is called a professional enthusiasm for development rather than for conserving resources.

I would like to say that some of these ideas have come from an article by George F. Kennan in the most recent edition of Foreign Affairs magazine, which is entitled, "To Prevent a World Wasteland: A Proposal."

His suggestion is to set up an international agency which would have essentially the functions which we would like to see the Council have.

So, again to emphasize, I think that the type of legislation that we are looking for is not only to create an effective watchdog agency in the Council but also to give the people a chance to defend the environment themselves.

I think I will just close there.

(Mr. Kenyon's prepared statement follows:)

Prepared Statement of David B. Kenyon, George Washington University Law Center, Representing the Committee for Ecological Responsibility

Mr. **Kenyon**. Mr. Chairman, I would like to say first that we greatly appreciate the opportunity to appear before you today, to tell you something about our activities and our ideas on control of pollution.

I am a vice president of the Committee for Ecological Responsibility, a group composed of George Washington University law students and law professor Arthur S. Miller. Two other officers of the group are here today—Ronald Plesser and Robert Stein—and they will, of course, be available to help answer any questions which your committee may have. The Committee for Ecological Responsibility was formed in response to the crisis in our environment, and specifically to investigate the proposed trans-Alaska pipeline system, to determine whether all possible safeguards would be taken to ensure against the enormous dangers inherent in such a project.

What we found was another example of a Federal agency's failure to effectively regulate a powerful industry. The three oil companies involved filed for the necessary land permits with the Department of the Interior in June of last year and asked for a response by July—a response permitting the construction of a hot oil pipeline across 800 miles of extremely delicate land, subject to permafrost thawing, land slippage, earthquakes, floods, and other dangers. The Department of the Interior found itself unable to comply with the request within a 30-day limit, but chose rather to delay the permits until studies of the problems could be made available and all interested parties heard. However, the studies available now, including the Geological Survey "Report on the Thermal Effects of a Heated Pipeline in Permafrost," and the "Preliminary Task Force Report," deal with the enormous problems involved, and not with solutions. As stated in the Geological Survey report:

"It is important that any potential problem be identified prior to its occurrence so that it can be accommodated by proper pipeline design. Identifying a problem in advance depends upon an understanding of the conditions under which the problem will occur. For that reason much of this report is concerned with problems. If the pipeline system is properly designed, and it is constructed and maintained in compliance with the design, they will not occur. Perhaps 'proper design' in some areas will involve abandoning plans for burial or changing the route; in others it might involve burying the pipe and invoking special engineering designs or monitoring procedures. These are matters to be determined by much additional study and an intensive program of field and laboratory measurements of conditions along the route."

The Department of the Interior's response to the problems outlined by the geological survey and the task force has been to draw up a list of stringent stipulations which are to insure that the environment is protected and which retain power in the authorized officer to inspect all phases of the project, and to suspend or terminate such activities when the provisions of the permit are not met. But as Russell Train stated in testimony before the Senate Committee on Interior and Insular Affairs (October 16, 1969): "Inherent in the content of these stipulations is the recognition that the complex and interrelated problems—particularly the technological and environmental—have not been completely solved." He also recognized that the stipulations are worthless without effective supervision.

We are not, of course, experts in the engineering problems involved here. But where virtually all the major conservation groups in the country have called for a delay, where the pertinent Government reports indicate that the problems are known but that the solutions are not, and where the chairman of the task force states that environmental difficulties are yet to be resolved, it occurs to us to ask why it is necessary to go ahead at this time. It appears that industry has once again created a momentum, all but irresistible, and that Government has been unable to maintain an effective countervailing force.

In order to block or to delay the granting of the permits, the Committee for Ecological Responsibility drew up a petition to the President, which was submitted in conjunction with the Wilderness Society and the Sierra Club. There are two injunction suits pending.

I have put particular emphasis on the Alaska pipeline because it is an area which we know something about, because it illustrates what we feel to be a continuing failure of the Interior Department to take steps to protect the environment, and finally because while Government has failed in one way, in another it has provided for a solution. In our petition, we requested President Nixon to have the newly-created Council on Environmental Quality make an exhaustive independent feasibility study of the pipeline. This Council represents to us an effort to create a body capable of investigating both immediate, short-term problems, and more importantly the long-term, methodical land-use planning that is so desperately needed on a large scale. Where Interior has failed, and where the congressional committees have neither the staff nor the resources to do the job, the Environmental Quality Council should be able to become the focal point of concern for our environment—through investigations by advisory and research task forces. Equally important, the Council should function as an information storehouse, able to inform the people as to the state of the law, the responsibilities of industry, and progress made in pollution control.

Mr. Train stated in the same testimony, following a discussion of the stipulations, that

"We are the first to recognize the equal importance of providing appropriate and effective supervision to insure that the stipulations equal in the field the importance we have accorded them on paper. We are aware that written stipulations, no matter how carefully drawn, cannot guarantee the protection on which we are insisting. This can only be assured by continuous surveillance and firm enforcement."

In an August 12 statement before the same committee, Mr. Train again emphasized the need for supervision, and stated that additional personnel would be required for the inspection and granting of special use permits for construction camps, gravel sites, air fields, and access roads. The same concerns have been stated by other officials in the Interior Department and by conservation groups.

Everyone appears to recognize the importance of supervision and the dangers of neglecting this important area. But it is unclear just where these extra inspectors are going to come from. In a March 26, 1970, article in the Journal of Commerce it was reported that the Interior Department "wants to double its Gulf inspection force from 17 to 34 and has requested money to hire new personnel from the Budget Bureau. The entire department has only 25 inspectors." What can happen when inspection is inadequate should be clear by now, particularly after the Louisiana tragedy. The Chevron Oil Co. was able to operate 137 out of 178 oil wells illegally, because, according to Secretary Hickel, "We haven't had the force to totally inspect the Gulf in the past, but if the oil companies had been adhering to the regulations that have been in effect for years, we wouldn't be having these spills." In Alaska, we do not believe that a permit should be granted before the problems of design are solved; nor should a permit be granted without a satisfactory number of trained, disinterested observers available to ensure that the oil companies will comply with all regulations.

There are three points to keep in mind while developing the Council on Environmental Quality:

First, it is important that the internal conflicts resulting from inconsistent goals be avoided. Such problems have plagued the Interior Department, and particularly the Bureau of Land Management, which is continually forced to choose between development of resources and conservation. The concentration of different and competing considerations within one agency does not always lead to the best or most balanced decisions, and often adds up only to a confusion of roles. The Council, then, should be concerned primarily with the protection of the environment and should review agency programs with that thought as the principal motivation.

Second, great care should be taken not to choose for the Council staff persons whose professional enthusiasm leads them toward an exploitation of resources rather than conserving them. In other words, potential conflicts for the members should be avoided, and the professional background of the individual should be considered as relevant to effective performance as a conservationist. Again, the central spirit and motivation of the Council must be one of ordered, controlled development, with emphasis on conservation.

Finally, the operating principle of the Council should be, in the words of George F. Kennan, "that one exploits what a careful regard for the needs of conservation leaves to be exploited, not that one conserves what a liberal indulgence of the impulse to development leaves to be conserved."

The quotation is taken from an article by Kennan in the April 1970 issue of Foreign Affairs, entitled, "To Prevent a World Wasteland: A Proposal." While Kennan is speaking of an international organization, the functions which he outlines are completely appropriate to the Presidential Council. He asserts that the organization should:

1. Provide facilities for collection, storage, retrieval, and dissemination of all information on environmental problems.
2. Coordinate research and operational activities which now deal with environmental activities or activities which affect the environment.
3. Create national standards in environmental matters and extend advice and help to individual States.
4. Enforce those standards which are necessarily national in scope.

While I have taken Kennan's ideas, and applied them on a national level, his central thesis should not be overlooked: That there is a need to create an international body to cope with what is clearly an international problem of pollution. There is to be a conference in Stockholm in 1972, sponsored by the United Nations Conference on the Human Environment. The U.S. Government should be undertaking studies with a view to presenting proposals at that conference, both with regard to the structure of a possible international organization and topics of particular interest.

The powers of the Council on Environmental Quality must be sufficient to insure coordination of agency actions which relate to the environment. The Executive order formally establishing the Council details expanded responsibilities beyond those mentioned in the statute, including authority to conduct hearings on projects which would affect the environment. All Federal agencies are supposed to submit advance analyses of programs with environmental impact to the Council for review. Mr. Train has stated, however, in an address to the 35th annual North American Wildlife and Financial Resources Conference on March 23 of this year, that "most individuals in Government don't know yet that this is required, and we may have to hit a few people over the head."

The power of the Council to coordinate the conservation efforts of the different agencies and to exercise a general overall review is an enormous step forward. If the Council is able to effectively disseminate information, it will further the efforts of individuals—for instance, the revival of the 1899 Rivers and Harbors Act is the kind of law that the people should know about. Thanks to your efforts, Mr. Chairman, it appears likely that industry in Wisconsin at least is not going to forget again that the law requires certain things with regard to pollution. Certainly as important, individual citizens will realize that they are not helpless in the face of irresponsible activity. The Council should be able to bring such laws before the public in a similar manner.

There are other proposals now before Congress regarding pollution and the environment. One worthy of special mention is the McGovern-Hart-Udall proposal which would give the citizen the right to a clear environment and the effective means to protect that right before administrative agencies or in the courts. The problem of standing to complain, in this particular context, would be finally removed. Congressman Udall's comparison of his bill with the antitrust laws outlines the purposes:

Our antitrust laws have long given citizens a right to sue in Federal court to prevent anticompetitive business practices, an area where the Justice Department has similar duties. This is essentially meant to accomplish the same thing as the citizens section of the antitrust laws. We are trying to solve a national problem—our polluted environment—by giving direct power to citizens to seek a remedy before a nonpolitical, objective forum—the courts.

The point here is that this legislation—both that enacted and that proposed—may have a dual function. It may, as does the Environmental Policy Act of 1969, create a Government body which may grow into an environmental agency with effective powers of supervision and control over both industry and Government agencies. Second, it may provide avenues for the enormous outpouring of national concern for the environment, and channel that enthusiasm into constructive avenues. There is no better answer to those that are worried over student militancy than to create responsive institutions which allow the citizen to play a role in the shaping of his world. The interest is clearly there—as witness the scope and intensity of the preparations for April 22—and if Government can find a way to encourage constructive use of that interest, the environment will be better protected.

Mr. Reuss. Thank you, Mr. Kenyon.

Mr. Scott.

STATEMENT OF DOUGLAS W. SCOTT, COCHAIRMAN, ENVIRONMENTAL ACTION FOR SURVIVAL, UNIVERSITY OF MICHIGAN, ANN ARBOR, MICH.

Mr. Scott. Mr. Chairman, as one of the leaders of ENACT, the Environmental Action for Survival at the University of Michigan, I am delighted to have this occasion to tell you how much we appreciated you and your colleagues, and I may say almost the entire membership of the subcommittee traveling to Ann Arbor, being with us, and taking part in our teach-in.

I think you brought a great deal to us, but I believe it is true to say on the other hand that you found much there that you could bring back—both in terms of specific recommendations during that hearing and impressions about the seriousness of purpose with which we are approaching this whole matter of environmental survivial.

I would like to offer for your record, if you believe it is appropriate, a copy of our full teach-in program as an example of the breadth of concerns that we got into once that program began to snowball.

(Note.—The ENACT program for the "Teach-In on the Environment," held at the University of Michigan Mar. 10–14, 1970, is in the subcommittee files.)

Mr. Scott. I would like to take just a brief moment here to reflect a little bit, having gone through the experience of that rather massive teach-in, on some of the conclusions that I think one can fairly draw. In his address, which was certainly the highlight of the teach-in, Ralph Nader referred to ours as "the generation of critical masses," referring to the fact that the problems in a great many areas of social concern are coming to a head simultaneously, just as our generation heads toward stage center.

These problems have been growing for a long time. They grow out of a very limited knowledge of what progress is and what individual prosperity implies.

We have come in this movement at a time when we see there is something wrong in the way in which our society has defined progress and prosperity and security, and these are the questions that we go to as we enter this movement.

This is the prospect as my generation gets its moment in the pollution-filtered sun, and it is little wonder, I think, therefore, that we joined the cast of "Hair," which opened our program in Ann Arbor, in saying we are going to do whatever is necessary to "let the sunshine in."

Contrary to the Biblical injunction, it is not the meek who inherit the earth, but the young. If our experience there and the experience of conferring with other youth leaders around the country is any fair sample, the young are not going to be meek about inheriting the kind of earth and the kind of society that we see around us.

We are the children of the postwar boom and the Age of Aquarius, and we were just idealistic enough to believe that the vision can become a reality if we work.

I think it is important to make the point that the movement is being expressed through the teach-ins and other youth activities. The burial of automobiles in California and all the things you are reading about these days are not simply negative and destructive, although there is some of that.

We affirm life and the fundamentally inalienable right of all life to its individuality and perpetuation, its diversity and living freedom. We oppose all that would belittle life, all that demeans its character or destroys its natural spontaneity, all that sullies its beauty or threatens its survival.

In our time, the critical mass of manmade problems has, for the first time, assumed dimensions which seriously do threaten the survival, not just of individuals, but of our whole earth. Once aware of this threat and its reality, how can we do otherwise than to devote every means open to us to reverse the lethal trends? Similarly, how can we do otherwise than to oppose those trends which demean the quality of life—individually or collectively?

As one of my colleagues in California said at one point, "If you are not going to live for the earth, what are you going to live for?"

Thus, I believe our attack on environmental abuse and ecocatastrophe is no passing fad, precisely because it conforms to and uniquely expresses the positive goals that we feel very strongly for quality in our surroundings and quality in our relationships to those surroundings and to each other.

David Brower chose the phrase in describing this decade which you and your colleagues have called the decade of the environment: He called it a "decade of renunciation." Two reporters from the Detroit Free Press picked that up their analysis of the teach-in and said:

"The teach-in was the purest essence of those times, renouncing not merely America's past failure to clean up its air and water, but its failure to repair itself in other ways—structurally, morally, socially, economically."

I do not think I was asked a question more frequently by the massive number of news media that were in Ann Arbor than was this some kind of cop-out on the war, on racism or repression or the other movements that draw attention on campuses. I got rather offended by that after a very short period of time, because I think the question implies an extremely limited sort of view of the capacity of young people to handle more issues than one at a time.

We are beginning to see—not quite as clearly as I think we will see in the months and years ahead—that there are connections between these various issues that we are concerned about, that the same kind of things that lead to the destruction of our environmental quality are reflected in other things that we find reprehensible in our society. As those relationships become clear, then, the issue is going to go to the sources, to the roots of the problem. I think that is something we will have to be alerted to.

I would like to address myself to two or three of the specific questions that the subcommittee has raised in this set of hearings, particularly the first question which asks what must Government do to strengthen or redirect its existing programs for environmental protection and improvement. And borrowing rather largely from Mr. Nader's ideas, there are four things I think the Government can do in the area of strengthening programs:

First of all, the matter of standards. We have a great many statutes and regulations that set performance standards—quality standards, standards for water quality, and so forth. They are largely inadequate where they exist. Furthermore, they are enforced by great, tedious procedures that drag on for months and years at a time with the burden of proof falling on some poor citizen who is just trying to protect his environment.

We are involved in a case in which we are working with a citizens' group in Escanaba, Mich., to fight the introduction in that community of a meat corporation kraft paper mill. We are not fighting the mill or the need to build a papermaking facility. We are fighting the kraft process. I have been astounded, in going to various commission meetings where permits have been involved, at the degree to which the burden falls upon the citizen who is ill-prepared in terms of legal talent or understanding of procedure but is simply trying to protect himself.

The burden of proof quite clearly lies with him, and I think this is an area in which changes have got to come.

I think one way we might go on this matter of standards is to call for a major review and overhaul of all environmental standards as standards instead of looking at just the air pollution statutes to see how those standards look, or just the water pollution regulations. We must sit down and look at all the standards that we have put together, over the many years we have been doing that in the Congress and in the State legislatures, and look at the standards together. We can then see not only if they are adequate in and of themselves in any particular case, but also how they relate to each other.

If in fact the air pollution created by the internal-combustion engine and other sources puts a great many nitrates in the air which eventually cause water pollution, how is that ecological interconnection reflected in the way we set standards?

I am reliably told that the people who set water pollution standards do not talk to the people who have to do with air pollution standards. I think someone has to take a look at this. My suggestion is either something analogous to the Public Land Law Review Commission, which would sit down and take a look at these standards in one place, or an attempt to innovate some kind of an institutional arrangement as a subgrouping or task force within the Environmental Quality Council and within the overview of a Congressional Joint Committee on the Environment, which is long overdue in Congress creating.

A second area that I would address myself to here is the area of sanctions that we apply. They are almost unworkable where they exist.

In general, a firm may find it economically prudent—even where it is put in the position of having to pay a fine for polluting under the 1899 statute or something of that kind—to absorb the fine as a cost of doing business and pass that on to the consumer rather than responding to the so-called sanction by cleaning up the pollution.

Thus, the fine is in effect a use tax for dirtying water or air. But unlike the concept of the effluent tax that Senator Proxmire has been promoting, the fines imposed do not come anywhere near close to paying the costs for the destruction that the firm is creating.

So I think we need to reassess the sanctions that we have and give them a very thoroughgoing review. I should say that Mr. Nader drew sustained applause with a couple of suggestions that he had for new sanctions.

He thought it would be useful to follow the model of the bankruptcy procedure—in which a trustee is established to look after the interest of creditors in a bankruptcy proceeding, to use this in the case of pollution—and in his words:

> If a company continues to make profits while it poisons its neighbors, we should develop a kind of environmental bankruptcy, where its operations are taken over by trustees in a trusteeship for peoples' right to breathe and enjoy a pure environment.

He also suggested the meting out of behavioral sanctions similar to the way a traffic judge sends offenders to a traffic court. Sending a coal executive into a coal mine for a while is one of his suggestions.

For serious offenses against the environment, he suggested suspension of activity in a corporation for 6 months or suspending the president of a company for 6 months from participating in that company; and he again drew a great deal of response from the audience by saying, "If they do that to students, why not do it to presidents of corporations?"

Mr. Reuss. Would you require all Congressmen who vote for the SST to ride on it on its maiden voyage?

Mr. Scott. No; I think I would have them stationed along the route. I think perhaps a rule at the outset which prohibited Congressmen from flying on SST would keep them in Washington more frequently.

A third area that I think we should go to is the matter of disclosure. Mr. Nader, of course, has made a career out of disclosing that which was not intended to be disclosed. He made the point, which I think is true, that we know a great deal more about the CIA in published materials available to the public in this country than we know about the internal operations of General Motors or Standard Oil.

We are trying to do something about General Motors. It is a huge institution. It is the third largest institution in the world—after the U.S. Government and the Soviet Union Government comes General Motors.

We know very little about it, yet it has massive impacts on our lives. The Congress recently passed, I believe in 1967, the Freedom of Information Act which, as it is beginning to be picked up by conservationists and by other citizens, is beginning to have a very telling impact.

(NOTE.— The law referred to is Public Law 89–487, as amended by Public Law 90–23 of June 5, 1967, 81 Stat. 54, 5 U.S. Code 552.)

Mr. SCOTT. What we have got to do, and I have no answer to this, is to find some way for a freedom of information act to reach into corporate offices without unduly placing their trade secrets and that sort of thing in jeopardy.

But Mr. Nader made the point that to protect a person who is polluting the environment by saying that what he is doing is a trade secret is just a little bit curious to say the least.

Finally, I would say strengthening needs to take place in the area of the budget. We have all heard about the $10 billion program for water pollution, which does not have $10 billion in it at all. It is actually a step backward.

At the same time that the President, his family and a head of high Government officials are traveling—at very great expense—to Chicago to proclaim their intention to save the Great Lakes, a severe budget cut is having a real and damaging impact on the research program of the Great Lakes Fisheries Laboratory, which is by all accounts the finest, most experienced program in fresh water ecology.

This is a very confused issue. You heard about it in Ann Arbor. It has implications to other closings that are going on to meet economy measures, but my latest information is in fact 26 people were laid off on the 23d of March, and they included researchers.

Whether it is being transferred from one agency to another, the research program is being damaged, and that is the only issue.

Again, with regard to the budget: where is the change of priorities? We are hearing the rhetoric, we are hearing the change of rhetoric, but where is the change of priorities? Phrases in presidential addresses, which I suppose are useful in diplomatic exchanges, have no effect on cleaning up the environment. Funds expended to tell magazine readers how much our firm has been doing long before the environment was an issue are strictly eco-pornography.

I am sure you gentlemen enjoy great credit for your work on phosphates and detergents and I am sure you enjoyed, as I did, the full-page advertisement in the New York Times recently by Procter & Gamble in which they told the public that phosphates are in fact a natural element common in the universe and therefore nothing to worry about. I wish they had spent the money they spent on that advertising to get phosphates out of detergents.

Mr. REUSS. I might say in that connection that our committee has been trying for many months to get from the soap and detergent companies a comparative statement of what they have spent on research into removing the pollutants from their product as against what they have spent on advertising, and for some reason we have not been able to get that information.

Mr. SCOTT. I am sorry I don't have that Procter & Gamble ad in front of me. There was one phrase in their ad which said something to the effect we have placed no upward limit on the amount we are willing to spend. They did not say how much they were spending. They said they placed no upward limit. Two quite different points of view.

(NOTE.—The Procter & Gamble Co.'s advertisment, "Questions and Answers About Phosphates in Detergents and Their Possible Effect on Our Lakes and Streams," is printed on pp. 78–80 of H. Rept. 1004, "Phosphates in Detergents and the Eutrophication of America's Waters," which is based on a study by the Conservation and Natural Resources Subcommittee.)

Mr. SCOTT. I think that if we and our colleagues—our generational colleagues—are to take seriously all the rhetoric we are hearing these days, we need to see one solid bit of evidence that priorities are changing. My candidate is the SST. I think the proposed Alaska pipeline is an equally good case.

I think the SST ought to be immediately stopped, that that money ought to be used for better purposes. All funding ought to be cut out for a project for which private enterprise won't pay itself. It has got no military value; it is a civilian project entirely.

We ought to forbid any U.S. carrier to own or operate any kind of SST, ours or anybody else's. We ought to forbid any foreign carrier to operate any SST's over our country. I think that would take the economic incentive out of the market for SST's very quickly. Our prestige will not suffer by the act, nor will our environment. Something like that is going to be required to demonstrate that something is really happening.

Lacking the opportunity for people to get involved on any other level, I think that the courts are becoming a great resource, and I just do want to call your attention to the legislation that has been drafted by Prof. Joseph Sax at the University of Michigan Law School. It is before the Michigan State Legislature, and several others these days, and it has recently been introduced in the Congress—in the Senate by Senators McGovern and Hart and in the House by Congressman Udall. In my opinion, it is a comprehensive, well-balanced proposal that would be a great step to opening the courts as the procedure by which we can have access to the General Motors records and that sort of thing.

I want to urge your study of this particular bill, and your individual cosponsorship with Mr. Udall of the proposal; and I would hope that all members of the subcommittee would recognize the importance of this legislation and join in the efforts to get the Judiciary Committee to hold hearings on it very quickly.

(NOTE.—The bill drafted by Professor Sax, House Bill 3055, was passed by Michigan's House of Representatives on April 21, 1970. It is reprinted as appendix 3 of this hearing record, pp. 337–341. The bill introduced by Congressman Udall, H.R. 16436 (identical to S. 3575, introduced by Senators McGovern and Hart), is reprinted as appendix 2, pp. 332–336.)

Mr. SCOTT. Just briefly I want to talk a bit about citizen participation. You asked what I think is a key question: How can citizens participate? The things that you need to have a citizen participating in something like this are: Motivation, a sense of efficacy, a sense that if you do get involved it will make a difference, information, and leadership; and I think there are ways which we can encourage public participation by working on all of those elements.

Motivation is the easiest for the moment. At the particular moment it is at a very high peak, and we are constantly asked, "What can I do to help?" There are people just looking for ways to get involved.

To improve people's sense of efficacy, I think somebody has got to take a look at the way civics are talking about in this country. There is more absolute misinformation handed out about our forefathers and the wonderful system they put together than in any other field. Remedial education of civics is essential. From cradle to grave, we are inculcated with the very romantic notion that we have got a simple system that has been worked out by some yeomen farmers back in 1700—and this system really works, you know, it is the best system on earth, and all you, who are concerned about a problem, have got to do is to look to the system and the system will magically respond. You do not even have to worry about how it happened. You know, you vote every so many years and that is about it.

But that is not about it at all, and most citizens have a very, very warped understanding of how the system works. Of course, they cannot get involved or participate in it.

Most citizens in this country do not read the Federal Register, which is the usual place that notice about things like the Alaska pipeline get published. So we are going to have to develop the kinds of mechanisms that get that information out. It is hard to know who to hold responsible for a particular problem.

I was privileged to hear the other morning some testimony on thermal pollution on the Great Lakes given to a Senate field hearing by Mrs. Lee Botts of Chicago. I would like to offer this for your record or your files.

She said the basic question for concerned citizens is: "Whom do you ask and who has the power?" She has a lovely map here of Lake Michigan with the various boundaries of official jurisdictions.

For example, the Corps of Engineers divides Lake Michigan into two zones: The Detroit office has half and some other office has the other half. That dividing line does not correspond to the dividing line between the States of Wisconsin and Michigan, and none of it corresponds to the lines of jurisdiction in that area for the Federal Water Pollution Control Administration—none of which corresponds to anything else. It is just a hodge-podge.

This map is just a classic. So how can you find who has got the authority? It is the old idea of divide and conquer. If you spread the authority around enough, nobody will be responsible. This is the bureaucratic ideal, I suppose, but it does not answer the questions that need to be answered about atomic powerplants on Lake Michigan.

(Note.—The testimony of Mrs. Lee Botts, representing the Open Lands Project, Chicago, Ill., before Senator Philip A. Hart's Subcommittee on Energy, Natural Resources, and the Environment, on March 30, 1970, is in the subcommittee files.)

Mr. Scott. I think what we are going to have to look for is something like an environmental ombudsman or some kind of environmental information center where citizens can go. Right now the youth group in Ann Arbor is serving this function. We get calls from people who have been frustrated for months about some particular problem. We are the only place they can turn to, and generally we do not have the information, but we try to find it for them.

I think this has got to come about. I think that nothing could be more important than taking a look at the tax laws which affect citizens' organizations working in the public interest and what happened to the Sierra Club. It essentially emasculates any ability they have to get involved in real political action. Yet, simultaneously business corporations and other vested interests are able to write off expenses to what amounts to lobbying and campaigns as a cost of doing business. The hypocrisy is phenomenal.

I think that has to be looked into—to come to the very difficult problem of defining a class of organizations that work for the public interest and receive exemptions from the tax problems that they presently live under.

I guess the final thing I would like to suggest is the idea of building into every kind of activity that affects the environment something very analogous to what we all have learned about in the space program—little holds that are automatically built into the countdown, to check things out at every stage in case any problem comes up.

We ought to have a procedure whereby if any two people come up and raise their hands and say," I don't think that pipeline in Alaska is a good idea," if they are a qualified people, that instantly goes into a hold.

Then there is a 60-day, or a year's, cooling-off period to look at the problem. I think these kinds of holds have got to be built into zoning provisions and other kinds of things.

Generally, when people get worried about a problem and are ready to get involved and participate as citizens, it was just at the time the decision was made—yesterday. They read it in their newspapers, and newspapers print what happened yesterday. By and large, the opportunity to get involved just does not exist.

(Mr. Scott's prepared statement follows:)

PREPARED STATEMENT OF DOUGLAS W. SCOTT, COCHAIRMAN, ENACT (ENVIRONMENTAL ACTION FOR SURVIVAL), THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICH.

Mr. SCOTT. Mr. Chairman, I am Douglas Scott. As cochairman of ENACT (environmental action for survival) at the University of Michigan I am happy to have this occasion to tell you, on the record, how delighted we were to have this subcommittee in Ann Arbor during our recent teach-in on the environment. Both in your formal hearing and individually, the members of this subcommittee brought much to our sessions. You also found, I trust, much to take away with you in the form of specific ideas and action proposals and in impressions of the seriousness of purpose with which we are approaching this whole matter of environmental survival.

The program which was offered during the Ann Arbor teach-in is a good example, I think, of the breadth and depth of interest we are taking. I would therefore like to offer, for inclusion in your record here today, the full teach-in program schedule.

YOUTH AND THE ENVIRONMENT

Because we at the University of Michigan have already gone through our teach-in activities, I would like to take a moment to reflect upon some of the conclusions one can fairly draw from the nature of our program and the response of our audiences.

In his address—a highlight of the teach-in—Ralph Nader referred to ours as "the generation of critical masses." By this he meant that today problems in a great many areas of social concern are coming to a head simultaneously. These problems have been growing for a long period, while previous generations, for whatever reason, tolerated them as little more than the unpleasant but unimportant side effects and biproducts of the rush toward progress and individual prosperity. Today, as these problems reach critical momentum and force all around us, we are rejecting the old standards of progress and individual prosperity which allowed them to emerge. For we recognize that these problems, taken together, seriously threaten to move the last step from critical to just plain lethal. This is the prospect for my generation's moment in the pollution-filtered sun. Little wonder then that we, like the cast of "Hair" which opened our teach-in, are uniting behind the demand that we do whatever is necessary to "Let the Sunshine In."

Contrary to the Biblical injunction, it is not the meek who inherit the earth, but the young. The young people who filled every event of our teach-in to capacity, the young people with whom I have conferred at recent meetings and conferences, and the young people organizing and working throughout the country have no intention of remaining meek and quiet as their future and the quality of their lives are bankrupt around them.

Martin Luther King evoked a strong image when, in his final address in Memphis, he said that what happened to him now was not so important as the continued momentum of the movement he had built. "For I have been to the mountain top," he said, "and I have looked over." We, too, have been up on the mountain tops and tantilized by the prospect of a better life, a better world. From our cradles we have heard the ideals of our society and institutions intoned. We have accepted the goals they suggest: A better life for all, in which all men are brothers, in which peace is our objective on every front, in which life is practiced diligently and life's environment treated with proper reverence. We, the children of the postwar boom and the Age of Aquarius, have been idealistic enough (naive enough) to believe this vision can become reality. We find it our own responsibility, therefore, to work to see it unfold.

Thus our movement—such as it is—against pollution and environmental degradation is not simply negative and destructive. We affirm life and the fundamentally inalienable right of all life to its individuality and perpetuation, its diversity and living freedom. We oppose all that would belittle life, all that demeans its character or destroys its natural spontaneity, all that sullies its beauty or threatens its survival.

In our time the critical mass of manmade problems has, for the first time, assumed dimensions which seriously do threaten the survival, not just of individuals, but of our whole earth. Once aware of this threat and its reality, how can we do otherwise than to devote every means open to us to reverse the lethal trends? Similarly, how can we do otherwise than to oppose those trends which demean the quality of life—individually or collectively?

These are probings toward an understanding of this movement which has, perhaps unintentionally, swept us up, altering fundamentally the devotions of our careers and lives. As a California graduate student recently put it: "If you don't live for the earth, what can you live for?"

Thus I believe our attack upon environmental abuse and eco-catastrophes is no passing fad, precisely because it confroms to and uniquely expresses the positive goals of quality in our surroundings and in our relationships to those surroundings and to each other.

And thus the changes we fell compelled to advocate are, in many cases absolutely fundamental. They reach to the heart of our society and its institutions—from boardroom to bedroom. They are revolutionary in character, because the circumstances in which we find ourselves require that the changes be fundamental, far-reaching and rapid. Extremism in the defense of life is not necessarily to be condemned. I say this not in advocacy of violent or extreme tactics—I abhor these—but in recognition that extreme danger may well necessitate responses of similar character.

The members of this subcommittee, and others, have joined in calling this the Decade of the Environment, and so it must be. David Brower calls it the "decade of renunciation," and two Detroit Free Press reporters used his phrase in their characterization of the Ann Arbor teach-in:

"The teach-in was the purest essence of those times, renouncing not merely America's past failure to clean up its air and water, but its failure to repair itself in other ways—structurally, morally, socially, economically."

But, again, the renunciation is not negative—it is cast in terms of an afirmation of life and the quality life might yet attain.

For your consideration, I would like to include in your record today the Detroit Free Press news analysis I quoted above and another retrospective article published in this week's issue of Saturday Review by Barry Commoner.

QUESTIONS RAISED BY THE SUBCOMMITTEE

While each of the broad questions you have posed is important, I cannot presume to address them all. I would like to go into two of them in particular, however.

"1. What must Government do to strengthen or redirect its existing programs for environmental protection and improvement?"

There are four areas in which strengthening of programs seems long overdue.

(*a*) *Standards.*—The enforcement and performance standards written into much of the present environmental legislation are simply inadequate. Even the enforcement of these standards usually requires a long and tedious proceeding in which the burden of proof falls to the citizen protesting degradation of his environment.

A major review and overhaul of all such environmental standards and their enforcement procedures appears desirable. Such a review would serve to assess the utility and impact of each particular kind of standard in its own right. But it would also provide a single forum to assess the interrelationship of standards in one field to those in another. How, for example, do the airshed air quality standards relate to the river basin water quality standards in overlapping geographical areas? At the moment we have divided these two functions into separate agencies, leaving the question of interrelationships in doubt.

It is my view that all of these performance and quality standards, in every area, need to be thoroughly reassessed and considerably strengthened if they are to serve as a useful tool for controlling degradation.

The mechanism for undertaking such a review might well consist of establishing an expert commission on the analogy of the Public Land Law Review Commission which is working to sort out and properly relate the body of confused public land laws and regulations. Or, this might be an opportunity to develop an innovative institutional arrangement as a task force or subcommission under the structure of the Environmental Quality Council (but with special, augmented staffing), working with the overview of a Joint Committee on the Environment which the Congress should promptly establish.

The role and organization of the Congress in this matter is, I suspect, a major source of the problem as things now stand. Each standard-setting procedure and agency is the special province of a different committee, leaving in serious doubt the Congress effective ability to coordinate these matters.

(*b*) *Sanctions.*—The sanctions we are willing to impose on those responsible for environmental havoc are pitifully weak, in those instances where they exist at all. In his address to our Teach-In, Ralph Nader made this a key point, citing the 1967 air pollution statute as being "almost unworkable in terms of applied sanctions." In addition to being weak, the sanctions can generally be imposed only after terribly drawn out procedural complexities which quite effectively discourage or simply wear out even the most highly motivated citizen seeking redress.

Moreover, the sanctions have no real bite in most cases. Thus we have the specter of a firm which finds it economically prudent (in the perversity of our economic analysis) to absorb the minimal fine for pollution as a cost of doing business, rather than responding to this so-called sanction by discontinuing the polluting behavior. Thus these fines become, in effect, a use tax for continuing pollution. But, unlike the effluent tax concept proposed by Senator Proxmire and others (which deserves very serious consideration), the fines now imposed never come even close to repaying the actual cost of damages perpetrated upon society and the environment.

A thorough, integrated review of all sanctions in this field is thus also needed. This might be accomplished by the same mechanism I have suggested to review standards. In both cases, the emphasis of the review must be strengthening of these devices which are our principal means of confronting environmental abuses effectively.

Mr. Nader had, incidentally, several ideas for sanctions which were very well received by his audience. He called for an analog in the environmental field to the trusteeship procedures used to protect creditors when a bankrupcy is declared. In his own words: "If a company continues to make profits while it poisons its neighbors, we should develop a kind of environmental bankrupcy, where its operations are taken over by trustees in a trusteeship for people's right to breathe and enjoy a pure environment." Mr. Nader also suggested meting out behavioral sanctions similar to the way in which judges send offenders to traffic school. Sending the coal company executives into the mines for a while was his example, or requiring utility executives to live in apartments right under their own smokestacks. For serious offenses against the common environment, he suggested "suspension of activity in a corporation for 6 months * * * if they do that to students, why not do it to presidents of corporations?"

(*c*) *Disclosure.*—Mr. Nader also made the point that we know a good deal more about the CIA in the published materials in this country than we know about the internal operations of General Motors or Standard Oil. Yet these major institutions have a huge impact on our lives and our environment.

The Federal Freedom of Information Act now provides a vital tool for citizens seeking disclosure of governmental materials and information. We have no such recourse in trying to learn about the impact of the great corporations on our lives. I have no answer to this problem, but I believe it is very real and that we need to develop means of overcoming it.

(*d*) *The final area in which strengthening is possible and necessary is that of the budget.*—For all of the loose talk about saving the environment, we have seen absolutely nothing that indicates a serious intention to reorder priorities in this regard. The $10 billion program for water pollution abatement isn't really a $10 billion program at al. At the same time that the President, his family, and a herd of high Government officials are traveling—at very great expense—to Chicago to proclaim their intention to save the Great Lakes, a severe budget cut is having a real and damaging impact on the research program of the Great Lakes Fisheries Laboratory, which is by all accounts the finest, most experienced program in fresh water ecology.

The same point is made when we talk about redirecting programs. Lack of funds is pleaded at every turn, yet the civilian supersonic transport boondoggle continues apace, the highway trust fund continues to relentlessly redouble the resources supporting the tunnel-vision construction of more and more highways, and a great deal of concrete is thrown around the environment with next to no control or direction.

One of the earliest and most obvious results of the sudden movement of environmental interest has been a sharp upswing in public relations and advertising budgets, both in Government and in business. But phrases in Presidential addresses—which may be useful in playing diplomatic games with other powers—have no effect on cleaning up the environment. And funds expended to tell magazine readers how much "our firm" has been doing "long before the environment was an issue" are strictly ecopornography. Any company publishing such advertisements is, in my view, missing the entire point about redirecting resources and priorities. If they are doing so in hopes that this will keep the natives quiet and happy or that rhetoric can buy off our environmental concern, they are in for a rude shock.

To be specific: I would like to see this country back off from the SST program, remove all further funding for this project which are loudly vaunted private, capitalist system clearly refuses to undertake without Federal subsidy, and legally forbid any U.S. air carrier from using any SST (ours or someone elses) over U.S. territory. Similarly, foreign carriers should be forbidden to bring the sonic boom, upper atmospheric turbulence and pollution, and conspicuous consumption for the jetset over our teritory. Our prestige will not suffer by this act—nor will our environment.

Something like this is going to be required, something vivid and very clearcut, if the skeptics among the young are going to feel that any real response is being made to their plea that we "Give Earth a Chance."

One answer to the difficulties of standards, sanctions, disclosure, and the other procedural wrangles which confront the citizen, is the opening of the courts to environmental actions. This subject is receiving much attention. While I am not a lawyer, I have very carefully studied the model statute drafted by Prof. Joseph Sax of the University of Michigan Law School. This statute is now being considered by the Michigan Legislature (H.B. 3055) and has been introduced in a modified version in the Congress as S. 3575 (McGovern and Hart) and H.R. 16436 (Udall). It is a comprehensive, well-balanced proposal which deserves the support of every Member of Congress who is now clambering onto this bandwagon. I want to urge your study of this bill, your individual cosponsorship with Mr. Udall, and your active efforts to seek prompt committee action and enactment of the measure.

The other question to which I want to respond has to do with citizen participation. This involves two of your questions:

"5. How can we encourage more public participation in the consideration of proposals that affect the environment?

"6. How can we make public agencies and officials more responsive to environmental concerns in the administration of environmental programs?"

Consider the prerequisites for effective citizen participation. A person must be motivated to get involved. At this stage, the environmental crisis is motivating many people to try to get involved. One hears very frequently the question: "What can one person do?" A person must also have a sense of efficacy—if he gets involved he must feel his involvement can help. This is really a benefit/cost matter, in which a person weighs the costs of involvement against the benefits he expects may result. A person must—and this is crucial—have information about the issue at hand, about the substance of the question, about the decision procedures involved, the timing for useful involvement, and about the proper point at which to involve himself. Finally, leadership is essential, for it is leadership—whether coming from a public-spirited Congressman or a conservationist organization—which can help put all the other pieces together.

To "encourage more public participation" will involve working with each of these foregoing points. Motivation will be the easiest, since people are already concerned and questioning. But more people must be motivated. Conservation has, for a long time, been a movement dominated by an affluent stratum of society. While it might—and often did—try to voice the concerns of other citizens, it did not involve them. This is changing, and the change must be encouraged.

To improve peoples' sense of efficacy in public decisionmaking is a timely and urgent problem going well beyond the environment issue. It is my personal feeling that the fault lies largely with the abysmal way in which we are taught about our political system in civics courses. We grow up with an image in our minds of a magic system which, simply because it is the best around and because our forefathers said so, is presumed to be magically responsive to citizen concerns. There is very little emphasis on the need for hard work in being an effective citizen, and none whatsoever on telling people how the system does, in fact, operate. The Congress, as I do not need to tell you gentlemen, is surely the most misunderstood institution we have. People cannot be expected to participate in a system they feel remote from and which they simply do not understand. Worse, they may try to participate on the basis of a mistaken idea of how it works, resulting in ineffectiveness, frustration and, ultimately, bitterness. Sloppiness such as this might be tolerable in passive times, but we live in activist times and some crash program to (1) revamp the institutions and (2) properly inform citizen about the system are very badly needed.

The key issue in participation is, however, information. This is by far the greatest hangup now. You cannot get effectively involved in decisions on the basis of newspaper accounts, because they don't tell you what you need to know in time to be effective. Television documentaries about "Who Killed Lake Erie?" are fine for arousing peoples' anxieties and motivation to get involved, but they cause more harm than good when they give the viewer absolutely no clue as to how to be involved.

The best means, for the activist, is through his membership in groups, which will keep tabs on developments and call them to his attention, pointing out what channels of involvement are most timely. That is the key to effective involvement—and that function is severely curtailed by tax laws and regulations which discriminate against such activities by citizen, public-interest organizations while openly permitting (indeed, encouraging) the same activities by other kinds of limited, special interests. This circumstance is, in my view, catastrophic in its imbalance to the favor of developers and despoiler and the status quo.

I therefore urge this subcommittee to look into this circumstance and to document in its usual thorough way, the imbalance in participation which results from this tax inequity. Procedures must be found to open up this system, if citizens are to be adequately involved in any effective way.

The other proposal for action that I have in this area arises by analogy from the space program. We are all familiar with the "holds" which are built into the space shot countdowns to permit technical adjustments. We need to similarly build "holds" into the decision processes by which environmental damage might occur. This, of course, is the effect that would follow from the double permit procedures this subcommittee discussed in the Hunting Creek case. It can be applied more widely, however, by inserting "holds" at the planning, financing, zoning request, and other stages of project development. Such holds might help us overcome the stupid argument that just because we have invested a few millions of dollars in a boondoggle such as the Cross Florida Barge Canal or the SST, we have a sunk cost that we ought not to waste by giving it up. This idea of built-in holds ought to be considered at the same time standards and sanctions are reassessed, as I have already discussed.

CONCLUSION

We are seeing a very sudden surge of environmental interest in this country. The "system" is responding, but slowly and superficially to this new interest. It is our job—yours by following through on the probings you are making here, mine by working to assure that this is no passing fad—to speed up the response and to get it out of the public relations department and into real action.

The symbol and motto we chose for the University of Michigan Teach-In on the Environment was the simple plea: Give Earth a Chance. Some people described this as a too simple "quietist" slogan. But it is much more, for consider the implications. To truly give earth a chance will require fundamental changes in patterns of personal and collective behavior humankind have displayed for centuries. To truly give earth a change will require that these changes occur very soon. Your leadership and your cooperation in giving leadership to our energies and a hearing to our concerns is, to cite a phrase not heard ringing in the halls of Congress too often, "right on."

Thank you.

(NOTE.—The Detroit Free Press story and the article by Dr. Barry Commoner to which Mr. Scott referred follow:)

[From the Saturday Review, Apr. 4, 1970]

BEYOND THE TEACH-IN

(By Barry Commoner)

The environmental movement has become a kind of theater where the deep-seated issues of a troubled world come under the spotlight, have their turns, and interact.

The sudden public concern with the environment has taken many people by surprise. After all, garbage, foul air, putrid water, and mindless noise are nothing new; the sights, smells, and sounds of pollution have become an accustomed burden of life. To be sure, the mess has worsened and spread in the last decade, but not at a rate to match the dramatic, nearly universal reaction to it that has hit the country in the past year.

Although the growing demand for action against environmental pollution is very clear, it is not so clear how the movement came about and where it is going. This is a particularly crucial time to find out. For the environmental teach-ins that are being planned on thousands of campuses this month are both the chief evidence of the origins of the movement and the main force that will determine its future.

Several environmental teach-ins have already taken place, the largest of them being that of March 11–14 at the University of Michigan, where the roster of speakers and participants was dramatic evidence that the environmental movement has become a meeting place for major and divergent elements of American society.

The kick-off rally for the teach-in, attended by 15,000 enthusiastic students, was addressed by Michigan's Governor Milliken, and a number of other municipal, State, and Federal officials were present—testimony to the importance government figures attach to voter interest in the environment.

Among the teach-in speakers were a variety of scientists with a professional interest in the environment: biologists, ecologists, engineers, sociologists, urban analysts, and public health experts. This reflects one of the earliest origins of the environmental movement—the work of those of us in the scientific community who, some years ago, began to detect in our own studies evidence that pollution is not only a nuisance but a threat to the health, even the survival, of mankind.

The well-known performers Arthur Godfrey and Eddie Albert—both ardent conservationists and antipollutionists—were teach-in participants, lending the prestige of the world of entertainment. Ralph Nader, another teach-in participant, spoke for the consumer and dealt with the failure of our technological society to meet the real needs of those who live in it.

Industry was represented by officers of the Detroit Edison Co., Ford Motor Co., Dow Chemical Co., and others—all industries that bear a large responsibility for serious pollution problems. The interest of these companies in public concern with the environment has become a matter of direct corporate necessity.

Labor was represented by Walter Reuther, whose union—the United Automobile Workers—opposed the construction about 5 years ago of Detroit Edison's Fermi reactor, located about 5 miles outside Detroit. Through an educational program, the UAW has developed a broad interest in environmental quality, and that consideration is now included among UAW contract demands.

That the president of the Dow Chemical Co. was invited to speak at Michigan reveals another important element in the environmental movement. Dow has been, of course, a prime target of the antiwar movement; its campus recruiting program has triggered many demonstrations by student activists, who cite the hold of the military-industrial complex on U.S. policy as a reason why our social system must be radically changed. And the activists had their representatives on the roster of teach-in speakers—one being Murray Bookchin, an environmental analyst who takes a socio-revolutionary approach to this and other social ills. Finally, the speech that closed the teach-in was given by Richard Hatcher, mayor of Gary, Ind., a city that suffers the specially intense environmental problems of a largely black population.

The Michigan teach-in epitomized the remarkable convergence around the environmental issue of a number of earlier, separate concerns: conservation, scientists' responsibility for the social consequences of science and technology, the consumer movement, the young generation's feeling for a more humane life-style, the businessman's worries over the impact of all of these on industrial profits, the problem of the ghetto and urban decay, the antiwar movement, and student activism against the Nation's social and economic system. Somehow, the issue of environmental quality touches all these separate facets of the crisis of American society.

I can report from my own experience that there is a close link between the problem of war and the problem of the environment. My concern with the environment does not stem from my professional training; I was trained as a cellular biologist, not as an ecologist. But I also learned that science is part of society and that every scientist owes it to himself, and to the society that supports him, to be concerned with the impact of science on social problems. And it was the problem of war that first introduced me to the environmental crisis. In the 1950s, when nuclear tests first showered the world with fallout, and the Atomic Energy Commission showered the Nation with assurances that radiation was "harmless," I studied, along with many other scientists, the path that fallout takes in the environment from the bomb to man. And I was shocked to learn that nuclear radiation is never harmless, to the ecosystem or to man. That is when I began to appreciate the importance of the environment to man. It was the AEC that turned me into an ecologist.

There are specific links between the environmental crisis, the evils of war in general, and the war in Vietnam in particular. One link can be seen in the economics of war and of pollution. That our industrial system is heavily sustained by the military diversion of human and natural resources from human needs has been demonstrated cogently by numerous observers; the military-industrial complex was not a myth to President Eisenhower, nor is it to the stockholders in major American industries. What is less known, but can be equally well documented, is that the profitability of most American industry and agriculture has been related significantly to their avoidance of a large cost of doing business—environmental deterioration. For example, the power industry, a major cause of urban air pollution, sells electricity to its consumers for a certain amount of money, but those same consumers pay an added cost for the environmental consequences of the power they buy—in laundry bills caused by soot, and in doctor bills (and some reduction in their life expectancy) caused by sulfur dioxide and organic air pollutants from powerplants. The dollar value alone of these "social costs" of air pollution that we now know of—and many remain unknown—adds about 25 percent to the city dweller's electric bill.

Some economists assert that the economic system could readily adjust itself to this situation by undertaking the cost of preventing pollution and adding that cost to the real price of its products. Such a readjustment would affect the cost to the consumer, not only of power but of all manufactured goods (nearly every factory pollutes the air and water), of transportation (cars, trucks, and airplanes are major polluters of air), and of food (U.S. agriculture, through its use of intensive fertilization and feedlots for fattening cattle to high-priced grades, bears a major responsibility for water pollution; organic wastes from U.S. feedlots exceed those produced by the total U.S. urban population). It may be that the economic system can get along without the crutch provided by the diversion of environmental costs to the people, and that it can get along without the crutch of military production. But thus far it hasn't, and one can at least suspect that in both cases the crutch has become a support essential to the system's stability.

Another close link between the problems of war and the environment is that both represent the inability of our technology to foresee its own inherently fatal environmental flaws. Like detergents—which, much to their developers' surprise, failed to be accommodated by natural water systems and bloomed into unsightly mounds of foam on our rivers—or the unanticipated ecological backlash of DDT, the Nation's war program can be viewed as a vast technological blunder. When, in the 1950s, the Pentagon and its scientific advisers decided to hang the Nation's defense on nuclear weapons, they did not know what the scientific community has since told them: It will not work; no Nation can survive a nuclear war. Remember that in 1956 Eisenhower campaigned for continued nuclear tests in part because "by the most sober and responsible scientific judgment they do not imperil the health of man." Eight years later, Johnson praised the nuclear test ban treaty, because it "halted the steady, menacing increase of radioactive fallout." The Pentagon also told scientists that it would not use herbicides in Vietnam if it believed that these agents would have "long term ecological effects" on that tortured land. Now we know from scientific evidence that mangrove areas of Vietnam will not recover from herbicide attacks for at least 20 years. Indeed, because of herbicide attacks not only on forest areas but on food crops, together with the massive assaults by more conventional weapons, the war in Vietnam represents, in my opinion, the first ecological warfare conducted by the United States since the attacks on American Indians. The technological failure of biological warfare as a suitable means of defense (for there is no way to test artificial infectious agents, much less use them, without incurring serious risks to ourselves) was recently acknowledged when the Government ordered the abandonment of its entire biological warfare program.

If there is little reason to regard the environmental movement as a diversion from the antiwar movement, its relation to the racial issue is less clear. Some approaches to the environmental problem seem to run counter to the interests of the blacks. This was dramatized recently at San Jose State College, where, as a symbol of environmental rebellion, a student program was climaxed by the burial of a brand new car. The event was picked by black students who believed the $2,500 paid for the car could have been better spent in the ghetto.

The San Jose burial reflects a personalized attack on the environmental crisis, an approach that is now fairly common among some student groups. They reason that pollution in the United States is caused by the excessive consumption of goods and resources, a favorite statistic being that the United States contains about 6 percent of the world's population but consumes half of the planet's total goods and resources. Since the wastes generated by this intense consumption pollute our environment, the eco-activist is advised to "consume less." In the absence of the added statistic that in the United States the per capita consumption by blacks is much lower than that of whites, such observations are not likely to arouse the enthusiasm of blacks.

Disaffiliation of blacks from the environmental movement would be particularly unfortunate, because in many ways blacks are the special victims of pollution and have much to teach whites about survival. A white suburbanite can escape from the city's dirt, smog, carbon monoxide, lead, and noise when he goes home; the ghetto dweller not only works in a polluted environment, he lives in it. And in the ghetto he confronts added environmental problems: rats and other vermin and the danger of his children's suffering lead poisoning when they eat bits of ancient, peeling paint. To middle-class Americans, survival is not a familiar issue. They have not yet learned how to face such a soul-shaking threat, as demonstrated by the continued failure to appreciate that the existence of ready-alarmed nuclear weapons may bring doomsday as close as tomorrow. For blacks, the issue of survival is 200 years old. If they have not yet mastered it, they at least have had a good deal of experience that may be enormously valuable to a society that now, as a whole, must face the threat of extinction. Blacks need the environmental movement, and the movement needs the blacks.

Confusion between certain aspects of the environmental movement and other social issues is also generated by the view that the former is closely connected to the population crisis. In one sense, this belief is valid, for clearly the world population cannot continue to grow at its present rapid rate (largely in underdeveloped countries) without eventually outrunning the capacity of the planetary ecosystem to produce sufficient food to sustain it. But some environmentalists hold that in an advanced country like the United States "the pollution problem is a consequence of population." This view leads to the idea that the environmental crisis in the U.S., which clearly calls for drastic action, can be solved only if we take strong action to stop the growth of the U.S. population.

A good deal of the confusion surrounding priorities can be cleared up by some facts. Nearly all of the stresses that have caused the environmental breakdown here—smog, detergents, insecticides, heavy use of fertilizers, radiation—began about 20 to 25 years ago. That period saw a sharp rise in the per capita production of pollutants. For example, between 1946 and 1966 total utilization of fertilizer increased about 700 percent, electric power nearly 400 percent, and pesticides more than 500 percent. In that period the U.S. population increased by only 43 percent. This means that the major factor responsible for increasing pollution in the U.S. since 1946 is not the increased number of people, but the intensified effects of ecologically faulty technology on the environment.

So the environmental movement—and the teach-ins that signal its mergence as a major political force—has become a meeting place for the major issues that trouble American society. This is its strength, and this is the importance of its future course.

Demands for action dominate the environmental movement, and wide-ranging programs of action are being organized. Some are direct, personal efforts to clear up the environment, such as community-wide campaigns to remove the junk from a stream bed. Some are politically oriented demonstrations, such as the delivery of a mass of beer cans to the lawn of a can manufacturer's home. Petition campaigns directed at remedial legislation abound, and legislators have been busy trying to reflect in law the new desire of their constituents for a clean environment. There are strong indications that on most campuses the current teach-ins will lead to environmental action's becoming a major, continuing feature of campus life.

Of course, there are those who regard the environmental movement as only the latest in a series of ephemeral fads for political action, doomed like its predecessors—civil rights, the antiwar movement, and student power—to rise to an enthusiastic peak and fade away before the hard, intransigent realities of political life. I disagree.

That danger does exist, for there are no easy solutions to the fundamental problems of the environmental crisis. Some of the superficial symptoms can be attacked directly: Creeks can be cleared of junk and beer cans can be collected. But no band of activists can return a river to an unpolluted state when the polluting agent is fertilizer draining from the surrounding farmland. And if the farmers were abruptly required to halt their intensive use of fertilizer, often crucial to the solvency of their operation, they would simply go out of business.

Once we look beyond its immediate accessible symptoms, the environmental crisis confronts us with very hard, inescapable choices. If we really want to cure the evil of water pollution, we will have to make drastic revisions in present waste-treatment methods, for these overfertilize the algae in the water, which soon die, reimposing on rivers and lakes the very burden of organic waste that the treatment was supposed to remove. The natural ecological system that can accommodate organic waste is not in the water, but in the soil, and no lasting solution to the deterioration of both surface waters and the soil can be achieved until organic waste is returned to the soil. For the same reason, no scheme of handling garbage that fails to meet this fundamental requirement of nature can, in the long run, succeed. And since these and similar violations of the demands of the ecosystem have become embedded in our ways of productivity, any effort to change them will encounter the massive economic, social, and political forces that sustain that system. Our major technologies—power production, transport, the metal and chemical industries, and agriculture—are a threat to the ecosystems that support them and to our very lives. Because we reckon the value of a technology by the value of its marketable products, we have neglected their cost to society—which is, potentially, extinction.

President Nixon has spoken of the need for "the total mobilization of the nation's resources" in order to pay our "debt to nature." But the resources needed to roll back pollution remain immobilized by the cost of the Vietnam war and the huge military budget, by the talent- and money-gulping space program, by the disastrous cuts in the Federal budget for research support, by the reduction in funds for the cities and for education. The environmental crisis, together with all of the other evils that blight the Nation—racial inequality, hunger, poverty, and war—cries out for a profound revision of our national priorities. No national problem can be solved until that is accomplished.

Confronted by the depth of this multiple crisis, it is easy to respond with a spate of studies, reports, and projections for future action. But, however essential they may be, more than plans are needed. For the grinding oppression of environmental deterioration—the blighted streets and uncollected garbage, the rats, and the cockroaches, the decaying beaches and foul rivers, the choking, polluted air—degrades the hope of our citizens for the future and their will to secure it. To unwind this spiral of despair, we must take immediate steps against the symptoms as well as the fundamental disorder. Community efforts to clean up rivers and beaches, to build parks, to insist on enforcement of anti-pollution ordinances and to improve them can give tangible meaning to the spirit of environmental revival.

All of our problems seem to have a common root. Something is wrong with the way this Nation uses its human and natural resources. And I believe that it is always healthy to reexamine, to test, the basic mechanism we have created to run our affairs. Those who are already convinced that our social system is in need of radical revision will welcome this opportunity to discuss the prospect. Those who are convinced that the system is fundamentally sound and can be adjusted to the new stresses should welcome this opportunity to demonstrate their conviction. Here, then, is good reason to bring the social revolutionary and the industrialist onto the same platform. Both need to face the same question: How should our society be organized to resolve the crisis of survival?

It is fitting that these issues are being called to our attention by the Nation's youth—in the teach-ins and in the student movement that will surely follow them. For young people, our future generations, are the real victims of the impending environmental catastrophe. They are the first generation in human history to carry strontium 90 in their bones and DDT in their fat; their bodies will record, in time, the effects on human health of the new environmental insults. It is they who face the frightful task of seeking humane knowledge in a world that has, with cunning perversity, transformed the power knowledge generates into an instrument of catastrophe. And during the coming months, I think, our young people will demonstrate that they are, in fact, equal to this task, as their environmental teach-ins and ecological actions begin to mobilize the knowledge of our schools and universities and the civic zeal of our communities for a real attack on the environmental predicament.

We have long known that ours is a technological society, a society in which the knowledge generated by science is a chief source of wealth and power. But what the environmental crisis tells us is that the future of our society now depends on new, profoundly fundamental judgments of how this knowledge, and the power that it endows, is to be used. If power is to be derived from the will of the people, as it should be in our democracy, then the people need to have the new knowledge—about strontium 90, DDT, herbicides, smog, and all the other elements of the environmental crisis—that must be the source of the grave new judgments and sweeping programs this Nation must undertake. Here, then, is an urgent task that must follow the teach-ins. Let us take our knowledge about the environmental plight to the people; let us help them learn what they need to know to decide the future course of our society.

The obligation that our technological society forces upon all of us is to discover how humanity can survive the new power engendered by science. Every major advance in man's technological competence has enforced new obligations on human society. The present age is no exception to this rule of history. We already know the enormous benefits technology can bestow, and we have begun to perceive its frightful threats.

The environmental peril now upon us is a grim challenge. It also represents a great opportunity. From it we may yet learn that the proper use of science is not to conquer nature but to live in it. We may yet learn that to save ourselves we must save the world, which is our habitat. We may yet discover how to devote the wisdom of science and the power of technology to the welfare and survival of man.

[From the Detroit Free Press, Mar. 16, 1970]

Environmental Battle Breeds Own Radicalism

(By Boyce Rensberger and Gary Blonston)

Ann Arbor.—Of all the millions of passionate words uttered during the University of Michigan's environmental teach-in, perhaps the most fitting phrase was turned last weekend by militant conservationist David Brower.

He called the times we are in "a decade of renunciation."

The teach-in was the purest essence of those times, renouncing not merely America's past failure to clean up its air and water, but its failure to repair itself in other ways—structurally, morally, socially, economically.

The language from the teach-in's 125 meetings was often revolutionary, but it didn't come just from radical students. Eminent authorities in the sciences and social studies repeatedly insisted that the problems are not garbage, but wasteful, selfish people; not smoke, but the attitudes of American capitalists; not inadequate laws, but inadequate lawmakers.

Academicians always have been more inclined toward theoretical, total solutions to social problems than the American people at large, but the mundane issues of the physical environment have provided a new set of listeners.

Many at the teach-in were housewives and homeowners and their non-activist sons and daughters, worried about the state of things, worried about the nature of the solutions to be tried, or half-tried.

Here is some of what they heard:

"Our fundamental problem is what I would like to call our 'chamber of commerce' syndrome, that growth is good." Cornell University ecologist LaMont Cole said that, and he was hardly alone in his opinion.

Throughout the week, speakers challenged the reflexive American quest for increased gross national product, increased profits, increased markets, resulting in increased consumption of resources, increased tonnage in waste materials, increased traffic problems and increased pressure not to spend any money for "externalities" like pollution control.

"The cities have been taken over by automobiles, but 41 percent of the population is excluded (by age, infirmity and economics) from the use of cars. We have to get over this love affair with the automobile." Yale University sociologist Lincoln Day said that, and he wasn't alone either.

Mass rapid transit was a favorite proposal of students at the conference, and UAW President Walter Reuther got his best audience response when he called for more auto company involvement in mass transit development.

"There is no question whether there will be a revolution." "You are in it, and you are it," said Seattle environmental attorney Marvin Durning. Whether the language was that forthright or softened into "changes in our politics" or "changes in our attitudes," the message of the teach-in was, in summary: Things must change, radically and soon.

Such questioning, even condemnation, of the most fundamental values of The American Way will undoubtedly alienate many middle Americans who had thought the environment was an issue everyone could agree on.

The teach-in showed that, though there may be wide agreement on the symptoms of our ills, there is not consensus on the cure. Fears that the environment issue might divert energy from fighting war, poverty and racism are clearly unfounded, at least for the students.

They are questioning the whole fabric of our society, not just a thread.

Though the Ann Arbor teach-in was a huge success for turning out and, perhaps, turning on thousands of people, the momentum toward radical social change is still low. Only a small minority of those attending advocated outright overthrow of the present system.

Yet, it is a beginning because among those attending were hundreds of representatives from other universities and even high schools that are planning teach-ins on April 22, which is E (for ecology or earth or environment) Day. Some 900 teach-ins are planned across the country and they will certainly broaden the movement's thrust.

How the Establishment will deal with this remains unclear. During the Ann Arbor teach-in, it was at best an indirect response, with the chemical industry blaming the population explosion and the electrical utilities blaming the automobile for air pollution and all of them claiming they have been doing their best to solve the problems "even before it was popular to do so."

Government didn't come off any better.

At one session Representative John Dingell assured a skeptical audience that, at last, the government has an Environmental Quality Council that is required by law to report this July on the complete status of the quality of the American environment.

"This will give us what we need to get started this summer on a meaningful approach to our problems," Dingell said.

At another session a member of that council, Robert Cahn, told his audience that the legal demand on the three-man council could not possibly be met by the July deadline. He read the official directive, which essentially called on the council to find all the answers, and the audience laughed with him at the directive's naivete.

In the face of that kind of official response to the problems of the environment, the audience accepted, at least temporarily, Brower's exhortation: "Let each one of you become the Ralph Nader of your block."

Earlier in the day Nader himself had recommended that corporations that pollute be declared in ecological bankruptcy and be turned over to trustees who would administer them to the advantage of society.

Not too long ago that kind of talk would have been branded as subversive. On the last day of the UM teach-in, however, some very straight people applauded every suggestion that the natural resources of the nation must belong to the people.

"You know, socialism's beginning to make some sense to me," one member of an audience remarked during a discussion of how much pollution comes from industry's attempts to make a profit by creating and filling a false need.

Throughout the 4 days of the teach-in, there was emphasis on refusing to buy products that pollute. To many that means high-phosphate detergents. To some that means automobiles. To a few that means the whole capitalist system.

It is an ethic not far from that of the early Christian renunciation of the things that are of this world. The difference is that Brower's "decade of renunciation" would embrace the earth.

Mr. Reuss. Thank you very much, Mr. Scott.

Mr. Shaine?

STATEMENT OF BENJAMIN A. SHAINE, OF ANN ARBOR, MICH., REPRESENTING THE LEAGUE OF CONSERVATION VOTERS OF FRIENDS OF THE EARTH, INC.

Mr. Shaine. Thank you, Mr. Chairman.

To take advantage of the opportunity you have given me today, I would like to summarize my prepared statement and then go on to some new material. I will take it just page by page and go over the proposals I have made and my conclusions.

My background has been primarily in the traditional conservation field of scenic and wild land preservation, so many of my comments are directed to specific changes in that area.

My statement is divided into a discussion first of problems of scenic and wild lands with specific suggestions for changes in legislation, and then I go on to look at the broader question of the environment, of national priorities; and I discuss the highway construction program, the Federal priorities there, as an example of the general Federal priorities in the environment. I make some criticisms. Then, I make a conclusion based on this evidence.

My first point is on Government policy in scenic lands. I discuss, first, changes relating specifically to the mining law, and I discuss the Mining Law of 1872 as probably the most dangerous of the obsolete laws governing our scenic and wild lands. To illustrate the problems here, I have chosen three examples of potential damage to scenic and wild lands caused by the law of 1872. One in Washington State is the Kennecott Copper plan for an open pit in the heart of the Glacier Peak Wilderness; another one in Washington State is the Cougar Development Corp.; and, third—and perhaps most serious at this point because of the de facto nature of the wilderness of the area and because of the multiple nature of the claims there—the intensive mining and development proposed for the White Cloud Mountains.

I conclude that the net effect of the mining law is to make mining the number one priority use on almost all public lands; and, therefore, this law is obsolete because it does not provide for a rational land allocation system.

I make some recommendations as a result. First, I suggest that the Mining Law of 1872 be repealed, and there should be replacing it a system of leasing covering all minerals, somewhat on the order of Secretary Udall's proposals of 1969. I say basically, though, it is not a question of leasing the land—but basically it is a question of changing the law so that the burden of proof that mining will not be unduly detrimental to other land uses and to the environment generally must be placed on the developer, and there should be an appeal procedure and an established judicial procedure for determining the best land use.

The second suggestion I make regarding the mining law is that bills like S. 719, the proposed Mining and Minerals Policy Act, not be passed in present form. This bill, like the recently shelved Timber Supply Act, is a dangerous bill which would further skew the administration of public lands toward exploitation by private industry. And I suggest instead of a bill like S. 719—which is an industry-oriented bill and a production-oriented bill, which is a backwards approach to the problem today—we need an overwhelming change in our total approach and overhaul of Federal mining policy and law; incorporating safeguards for the environment; insuring public profit from the development of public lands; providing an impartial system for determining the highest land use in a particular locality; and clearing up the chaos of patents and claims that makes mining development, as well as the administration of the public lands so difficult.

Third, I suggest a short-term, immediate measure which would involve the administering agencies, the Forest Service, and the Bureau of Land Management, and other agencies. I say that these agencies should be given a clear mandate by Congress to regulate mining on their lands.

Now, there are provisions in the law currently which could be interpreted to give the Secretary of Agriculture the right to control access and types of development on Forest Service lands, but the Secretary has not chosen to use those laws as strongly as he might, and the Congress I would suggest could give him a clear mandate in that area.

The second area I discuss relating to scenic and wild lands is changes needed in timber management policy. I would like to thank the House of Representatives and especially Congressman Dingell for at least temporarily shelving the Timber Supply Act. But preserving the existing system of timberland administration is not an adequate response to increased pressures for exploitation. I suggest that the basic system of timber management be switched from one of administration by the Forest Service for determination of what should be cut to, like with mining, a system in which the decisions are put into the public arena through a judicial or quasi-judicial form.

What I say about allocating public land for mining purposes applies here. The decision to dedicate public lands for development should be made by an authority independent to the administering agency and not the private developer and only after public hearings at which all parties may present evidence.

I also suggest here that private corporations, including the timber corporations, be controlled more closely, and that strong Federal laws are needed regulating the nature of logging and replanting of private lands, and these laws should impose limitations on the uses of private lands which unduly interfere with watershed, scenery, recreation, and other uses.

Concluding my discussion of wild and scenic lands, which is my area of greatest proficiency and experience, I say the burden of proof must switch from those who wish to preserve the environment to those who wish to make changes in it. I cite the example of the Federal Power Commission as an agency which at least does hold public hearings in a semijudicial sense before it decides to go ahead with hydroelectric development by public or by private corporations.

That is a discussion of a very limited area, wild and scenic resources, a traditional area and an important one, but certainly not the whole area of the environment.

Now let me look at highway construction as an example of Government policy and of Government priorities. I discuss Government policy toward highway construction today because first it has a tremendous impact on the environment—that we know—and, second, because the allocation of massive Federal funds to highway construction reveals our true priorities.

The interstate highway program is a $60 billion public works project financed by the Federal Government through compulsory gasoline taxes paid by highway users who have no feasible alternative methods of travel.

The result is, of course, the Interstate Highway System—which is not only an interstate but an intracity system. It is the major means of commuter travel in major American cities today. I discuss in my prepared testimony two major disadvantages out of the many of this Interstate Highway System. The first is congestion and environmental degradation and pollution caused by the highways themselves. I would point out a particular experience.

I was teaching 14-year-old boys from the inner city last summer in Seattle. I was teaching them an ecology and environment program. Over the course of the summer I had a chance to talk to them quite extensively about their views of the city. These 14-year-old boys, whose active memories couldn't be more than 5 years old, had a definite perception of a real degradation of their city's environment, both in pollution and congestion. If you know Seattle, you can tie both of those to a great extent to the construction of the central freeway, I–5. These are 14-year-old boys. You don't have to be a professional to see the changes that do come about as a result of the highway system and of course other things, too.

There is a second point which I think has been overlooked especially by those who have been discussing automobile pollution, and that is the potential disruption of the carbon cycle by the production of carbon dioxide by fossil fuel burning.

I had the chance to talk with the author of a report on this subject and he gave me a copy of his report, and what it said was that we could expect to 20- to 60-percent increase in the amount of carbon dioxide in the atmosphere in this century and that no one is sure, because the studies haven't been authorized, funded, and done, but this could result in a raising of the temperature of the whole earth up 3 to 5 degrees in the next few years, and the impact would be massive.

For example, the calculations on which dams have been constructed in the Southwest and elsewhere in this country are made on river flows which are related directly to rainfalls in areas like the southern

Rocky Mountains, and an increase of air temperature of 3 to 5 degrees could significantly decrease the rainfall, for example, in the Rocky Mountains and this would make the calculations on which all the dams in the Southwest are based incorrect, and it would result in drastic water shortages in areas like the Southwest and elsewhere in the immediate future. We are talking of the active lifetimes of youth and people who are not so young any more, too.

So what I say in conclusion is that the duty of Congress is clear: The highway trust fund must be opened up so that all the money now going into the interstate system will be allocated to research and development in alternatives; and there must be extensive research in problems which have been virtually neglected in the public press, like potential disruption of the carbon cycle.

The priorities of Government are demonstrated not by rhetoric but by funding, and to me the District of Columbia freeway program and the highway trust fund indicate congressional priorities today; and they indicate they are not on environmental quality. Like the SST, this is another key issue which shows where our priorities really lie.

In every major American city citizens are struggling to obtain public hearings, to generate publicity, in an attempt to stop freeway growth. The burden of proof today is on those citizens who oppose construction, who are concerned about the environment—and survival.

What we need is a reversal in our method of making decisions. The burden of proof must switch to the developer.

On pages 10 and 11 I have some conclusions. I hope that you and the other committee members who are not able to be here today will read them carefully. But I would like to make some oral conclusions which are of a little more personal nature.

First, I would like to tell you what my job is now and what I think about it. I am the Michigan coordinator for the League of Conservation Voters and that is a direct action political group. What we are trying to do is to develop the political muscle of the environmental movement. The way we are trying to do this is to mobilize those people who are concerned about the environment and put them together as canvassers and researchers and going into the records of individual Congressmen and other Government officials, mobilize them in key congressional and other races where the races are both close and in which environment is a strong issue.

For example, in Michigan we are supporting the superlative record on environment of Senator Phil Hart, who is up for reelection. In Michigan what we are going to do is to go into key areas in the State in which people are strongly concerned about the environment and tell them about Senator Hart's record on the environment and say vote for him not because he is a Democrat and because he is a good guy, but vote for him because if you vote for him on the environment, after the election we can show that the environment has real political muscle. If we can show that, when any environmental group goes to Congress later to lobby, to ask for improvement in legislation, regardless of its tax status, it will be able to say that the environment is an issue which has political impact.

My point here is I am working within a system, directly within the democratic political system, certainly as much as anybody in this country is. But now I would like to give you my personal world view and my evaluation of what it means to be a youth environmentalist today. I think it is pretty pessimistic, and I think I am speaking for much of my generation.

At the airport last night while we were waiting 6 hours for the plane to come in from Chicago, a high school girl came up to us—she was very obviously very high on drugs—and she said, "What you are doing is really a heavy thing, isn't it?" We were sitting going over some of the testimony for today. We said yes, and we talked with her for about a half hour. She was totally unable to comprehend what we were doing, and she had just come to the airport just to groove on it and see the situation.

I think you should keep that girl in mind as I go on with my conclusions here, because the alternative to the kind of work that I am doing is either living like that girl (and I don't think you would like to see our youth live that way), or else turning to something more violent.

I have a great anxiety about the future when I look ahead 20 or 30 years. I don't see the situation even as good as the one I grew up in. I see one that is pretty bleak. I see the things I love and treasure, and I guess I am a sentimentalist, and I love nature and birds and bees, and I see that going, and I see the situation that will bring the kind of human relationships that I grew up in, a strong family, a loving home, I see situations that breed that healthy situation going, and I see our complex industrial society as maybe a brief interlude in history, and I see that politicians with a few exceptions really don't understand the gravity of the situation we are dealing with.

Let me tell you about a recent meeting we had in Grand Rapids. My Congressman is the Minority Leader, Mr. Ford, and he was on a panel discussion with two environmental experts, both population experts, and the subject was population. Mr. Ford spoke first and he made some opening remarks without too much substance, which is all right, I guess. He wasn't the expert on the panel. Then the experts came up and presented a very gloomy and well documented statement about the impact of population. Then it was opened up to the floor.

I asked the first question. I said, "Mr. Ford, do you accept the analysis presented by the population experts and, if not, why do you disagree specifically, and given this analysis how do you justify this Nation spending our limited resources"—and I listed some spending programs like the SST and the Corps of Engineers projects.

Mr. Ford's answer was the kind of answer that leads me to be so pessimistic. I would like to quote you from his answer, and I think it would be fair if I said that this was the substance of his answer:

> I believe we are headed in the right direction in the matter of priorities. The technology that will be with us will solve the problems that these experts have presented.
>
> I think we can always find a new way to move ahead.

I am working within the system now, and I have devoted my whole life to it for 2 years, since I was 20. I am one step away from hopelessness and withdrawal. At this point my commitment for at least this short time has been so strong that if there is one big loss in something that is really deep inside of me, I think I am going to be out of the ball game.

If the city of Seattle is destroyed by the freeway system that is proposed for it, and I love the city of Seattle, I think that might do it. I know if Kennecott blasted its half-wide open pit in Miners Ridge in the middle of the most beautiful place in the whole world as far as I am concerned, that would do it. I can't conceive being able to function if that took place. Under the law which is the responsibility of Congress, Kennecott is legally able to go ahead and build that mine now.

There are two ways I could turn once I am out of the ball game—revolution and utter withdrawal—and both will result from alienation and despair.

My pacifism and frustration with the possible consequences of a violent showdown in this country lead me to the second alternative—despondency and withdrawal. I am working now within the system trying to influence electoral politics, trying to influence those of you in power, but I am afraid and pessimistic.

The one clear conclusion of the teach-in in Ann Arbor is that liberals and radicals alike believe that the fundamental economic system of this country, the very existence of corporations in their present condition, the very nature of the Congress and the seniority system, the nature of the administration, that these systems must undergo drastic change if we are to survive.

It was interesting to note in those discussions in Ann Arbor that people like the president of Dow Chemical and whatnot, conservatives and middle-of-the-roaders were obviously irrelevant to the discussions. The only time they were even involved was when an SDS or a protesting questioner became a participant. They were left out of the real substantive discussion.

Ralph Nader was the most exciting speaker at that teach-in because he ordered a change without revolution. But change without revolution is slow, too slow unless those of you already in power, people like you, people like your colleagues, risk your careers in support of change. And unless you become nonrevolutionary radicals, the political system of this Nation will lose my active support, and it is my observation that will lose the active support of many of those who are not now totally alienated.

So in the name of the people, I beg that you have the guts to save us.

Mr. Reuss. Thank you, Mr. Shaine, for a very moving statement.

That concludes the presentations.

Let me now ask some questions, perhaps one suggested by Mr. Shaine's ending.

Mr. Scott, on page 12 of your paper, you call for crash programs to revamp the institutions.

Would you list some of those crash programs?

Mr. Scott. I am trying to find the context.

Mr. Reuss. The first paragraph, page 12, "We lead in activist times" and "some crash programs to revamp the institutions are very badly needed."

Mr. Scott. This was in the context of people simply not understanding how the system works or how they can participate. A person like Ben, or a person like myself, or any of us gathered here today, are one small part of a much broader body of concerned young people or just concerned people of any age.

I think you can overdo the fact that this is a youth movement and we tend to be arrogant about that sometimes. We are the ones who have made the effort or who have been attracted to the system, who have come down to Washington and have interned and have really gone in and subscribed to the Congressional Record and all that bit, trying to find out how the system works.

We have begun to get clues, and we are beginning to understand how it does work. The average well-educated graduate student at the University of Michigan has no idea of what a subcommittee is or how to deal with it, how to kill the Timber Supply Act if you don't like it, than they know how to fly without an SST.

I think it is a great tragedy. I think you have to be realistic to realize that people are not going to make huge changes.

When I say "revamp the institutions," I think they need to be opened up in the sense of communicating what they are to the people. I think the Congress is by far the most misunderstood institution we have, with the possible exception of General Motors.

I think people have to understand how that works. Your colleague, Congressman Dingell, from the stage at the teach-in said:

> You know, I used to have great hopes for people coming and participating in Government, but I find most people don't care or that most people don't get involved.

I think it is not the people don't care. They get worked up about some particular problem and it does not last. Maybe there is a critical hour they can get involved. They make one little stab at it. They are frustrated, they are turned off and they become depressed. They do in microcosm what Ben is talking of in macrocosm, because they are just too frustrated.

I think mechanisms need to be developed in existing institutions and new institutions need to be developed to get people involved.

One of the gentlemen mentioned the idea of a consumer's guide put out by the Government. Well, why not? This is the Government's responsibility—to tell us the results of its research, which are unavailable on consumer tests and this sort of thing. That is the general thrust.

Mr. Reuss. Let me pursue this a little more specifically with you temporarily unrevolutionary radicals. You mentioned certain specifics—the fact that Congress is funding the supersonic transport plane, even though the people of this country do not want to pay for it and do not want to have it.

You mention that urban freeways continue to go up and pollute the atmosphere and ruin the city. You mentioned the fact that mining companies stand ready to desecrate that which had been a pristine wilderness area. In fact, you also are aware that in Congress these matters tend to be controlled—in the first instance at least and frequently in the last instance—by particular committees which have particular points of view. The word "seniority" has also been mentioned, and let me say I think the seniority system is a miserable system. I wish it could be abolished tomorrow. I am going to do my best to abolish it.

What are you doing about it? You have correctly diagnosed it as at the root of some of our environmental difficulties.

Mr. Shaine. Is the question directed to me?

Mr. Reuss. You first and then anyone else.

Mr. Shaine. At this time I am a full-time employee of the League of Conservation Voters, which is attempting to have its influence felt in two ways: First, to influence who gets into the Congress; but I don't think we can do that necessarily right away. But by developing political muscle in specific districts, we are going to try to increase the lobbying power of conservation groups within Congress.

If we are going to change the committee structure, we are going to have to change the Members of Congress so they will accept it, and put more people like yourself in the position of power.

Mr. Reuss. What are you doing about the Republican and the Democratic parties? They, after all, do have conventions; they have platforms; they appeal to the voters; they have caucuses, majority leaders, whips, and so forth.

What are you doing about them?

Mr. Shaine. Well, I personally am not active in the party system. I think we will have an impact on the parties, though, because by being an independent political action group which can mobilize voters and which can throw its support either way in an election. If we are powerful enough, we certainly will get the parties competing for our favors, and that will influence their platforms and certainly we will set up standards for such platforms.

Mr. Scott. Let me add to that that in 1968 the candidate who won the presidential race, I think, mentioned the word "conservation" about four times during the campaign in a radio talk. This at that time was not a big issue and it was not something that was found politically expedient, on the most superficial or egregious level, to bother with.

It was not popular. The Gaylord Nelsons and the Henry Reusses who run on this kind of a program are very rare at this stage. One direction I believe we need to move very heavily into is promoting that. It seems to me the most important way to do that is to inform the voter, to inform the individuals, to start. A movement on ecology is underway in this country. Every politician who has any hope of avoiding early retirement is getting on this bandwagon.

I think you then grasp that opportunity, greedy as it may be. This is, you know, the motherhood issue of today and we must get him to make commitments that he cannot get out of.

I must pause to stress that this is a motherhood issue you have today. My prime advice to people in political life is to avoid motherhood issues, particularly motherhood.

I think you try to change the circumstances, and then I think you go to the voters and tell them about the seniority system. I don't think anybody is doing that. I don't think that would counter the tax law. The tax law is to avoid seeking to influence legislation, but if we are seeking to influence the way Congress is established, probably every lobbying group in the country that wanted to could mobilize its people on the seniority system.

The votes that you gentlemen go through at the opening of a session of Congress in establishing your committee personnel and passing the rules and all that could be opened up, I suppose.

Mr. Reuss. Any other comments?

Mr. Kenyon?

Mr. KENYON. I want to echo partly what has been said. I think our most important function up to now has been essentially publicity of some of the failures that have happened. I think it is just a truism that there are going to be Congressmen who would be concerned over issues like environment no matter what; but there are also going to be Congressmen who are not concerned about it but who are going to be forced to be concerned simply because the voters are informed and they know what is happening.

I want to broaden that to say that is also true of agencies. When it comes to something like the pipeline, which again I bring up because we know something about it, I think the Department of Interior knows that there are interested law students at George Washington—we have been over there; we have telephoned them; we have asked them for interviews; they know we are interested; and they know something will come out of it, such as the work on the lawsuit and so forth.

I think that is going to make the issue of environment an inevitable part of a party platform.

Mr. GRABARCK. I believe your original question as to what we are doing about influencing party platforms so as to include environmental protection unfortunately causes me to hang my head in shame, since it is quite clear that the American public has been very lax in offering any type of support in the past to those who would back environmental legislation.

I think we have to accept the full burden of responsibility with the exclusion of one fact—why didn't our leaders accept their responsibility without having to be told? But what has happened is in the past, and of course the opposing group has more money to support the campaign results—to support a man's campaign—and it costs a great deal of money to carry out a political campaign; the graphic arts advertising industry is very expensive. The public did not back those candidates with real leadership qualities—we forgot about them after they made their stand in Congress. Currently, however, there is a trend by the public to place both monetary and voting muscle behind such people.

As an example of this change I point to our recent encounter—during which I made a lot of friends—with the Baltimore Gas and Electric Co. when they wanted to put in their nuclear-power reactor plant at Calvert Cliffs. The decision was all settled when our society—the North American Habitat Preservation Society—presented a petition signed by 10,627 residents of Maryland who stated that they were willing to pay a reasonable amount more on their monthly electric service charge to have the proper controls—cooling towers and increased radio-nuclide filtration shielding—put on the plant. Suddenly, of course, this statement of determination by residents of Maryland gave Governor Mandel and Comptroller Goldstein a little bit of muscle. I noticed in the past few weeks that the Governor has partially switched his former stand, not completely because he is not quite sure, but the petition has given him the ability to make a stand.

The same thing happened with our wetlands issue. A similar petition and a court case was initiated by the people really concerned. When information of this was submitted to the governmental agencies and was passed up the line, they—the politicians—became cognizant of what the preference status of the voters was at the time and thus the select interest of the developers was offset by this public action. The Governor made a public announcement that he wanted some protective legislation and just recently Maryland passed one of the strongest bills to safeguard the wetlands along with another bill which I am not yet sure of its status. I believe it had been passed at the close of the session—but I am not certain of this.

I think basically the lack of environmental involvement by our elected officials has been the fault of the public. There have been instances in Congress where a man has made a stand for the environment and at election time was forgotten. These men need the support of the public and funds—this is obvious.

Mr. **Reuss.** This brings up, Mr. Grabarck, another matter you mentioned in your testimony a moment ago. You said, or I think I heard you say, that environmental protective activity should be so conducted so as not to injure business.

Mr. **Grabarck.** Yes.

Mr. **Reuss.** I did hear you correctly?

Mr. **Grabarck.** You heard me correctly.

Mr. **Reuss.** I wonder if your colleagues on the panel would agree with you. For example, let's say that a business is pouring poisonous chemicals or slaughterhouse waste into a stream because that is the way it has always done it, thus making the stream a dead stream for the people down below. If you are going to stop the business from doing that, I suppose you are hurting that business.

What is your view on that?

Mr. **Grabarck.** I expounded on that further, if you remember, in my testimony. I said that had the proper research been done in the past and had the proper responsibilities been taken by Federal agencies, we would have the pollution abatement controls.

Who would have thought 30 years ago that everyone would have television in their homes, that it would be sold for $89 or $88? It is the same thing in pollution control. The more research we do, the simpler the device we can come up with and the less expensive these devices would be.

I feel this way—I am quite willing to pay the consumer's cost for a healthy environment. Along with paying an additional price, we might also ask ourselves what is another method we could use to initiate environmental clean-up and not damage the small businesses? We spend over $16 billion on farm subsidization programs—in other words, paying to keep family farms in tact, but statistics show that family farms are going down hill. This subsidization program has served no other purpose than that of feeding the large mechanized farmer who does not need the subsidization. This money could be taken and put into, as I said, long-term, low credit loans which could be made available to businesses that want to clean themselves up—for the purpose of installing pollution control devices.

In the meantime, Government must take the responsibility—this is a serious problem, and the more research we do, the better the device we will have.

Mr. **Reuss.** By "long-term, low interest loan," do you mean a loan at, say, 3 percent interest?

Mr. **Grabarck.** Yes. According to Senate Document 97 that figure is used in determining the building of dams by the Army Corps of Engineers.

Mr. Reuss. The Government now pays about 8 percent when it borrows. Therefore, if the Government is going to lend money at 3 percent, the taxpayer is going to have to absorb the 5 percent differential.

Mr. Grabarck. That is correct.

Mr. Reuss. Let me ask the other members of the panel: Do you think the taxpayer should pay for the cost of an industry's changing from using the stream in front of it as an open sewer to a better method of disposing of its waste?

Mr. Spensley. I guess I don't agree with Mr. Grabarck but I think it is a semantical problem when we talk about business. I am not willing to pay for the additional cost of a corporation or a business to continue to pollute the environment at their profit or, shall we say, the investor's profit. I think it was pointed out quite well when we talked about industrial industries trying to absorb the costs of the pollution that they produce, it is not really a fair statement of what will happen.

Ultimately, it is going to be handed on either to the taxpayers, the consumers that buy the products, or the people that invest in the corporation.

I as a taxpayer would not be willing to accept that cost. I would rather see that kind of cost go to the investors in the company, the shareholders, and perhaps even the consumers if need be, but I would not agree that it should go to the taxpayers.

Mr. Kenyon. I want to disagree with that in part.

Mr. Reuss. With what?

Mr. Kenyon. With Mr. Spensley's statement.

Goods simply cost money, and part of the input into creating these goods is use of the environment, and it seems to me that the American people have been paying less for their products than they cost.

I don't think in the long run you are going to be able to simply put the cost of cleaning up the environment or the cost of creating the same type of products without pollution simply on business. It seems to me that is in many instances unrealistic because it is going to wipe out profits and destroy the businesses and destroy the products which the American people demand.

Ours is a consumer society, and I don't think you are going to get to the sort of situation where groups are going to sit down and say, "Well, I am not going to use any paper towels, I am not going to use any cars, and so forth; I am going to recycle the tin cans that I use." That is not going to happen.

Mr. Reuss. Let me get down to specifics so I can really determine whether Mr. Spensley and Mr. Grabarck are in disagreement. The "X" company makes glue. It makes glue by buying a lot of dead cows and chopping them up and removing the dewclaw and the rest of the dead cow is chopped up a little more.

In the case of the "X" glue company, it is then thrown into Lake Michigan which is where people swim, fish, and so on, except now they can't swim and fish there because the animal wastes have so contaminated the lake and the beaches that it is uninhabitable.

What should be done about it? If you do nothing about it—let them continue—then the price of glue will be lower than it would otherwise be, because you have given that glue company an opportunity to thrust some of its costs upon the general public, namely the costs of treating its wastes.

Mr. **Grabarck**. Would you let that fact cause you to say that we should do nothing about the "X" glue company thrusting its waste in the lake?

I believe that the price of the glue should go up proportionately to cover the cost of cleaning up, but I do not believe the business should be closed.

Mr. **Reuss**. The what?

Mr. **Grabarck**. I do not believe the business should be closed, only because——

Mr. **Reuss**. How are you going to do that?

The business has been operating for 50 years because it has found that nobody threatens to close it if it does not stop throwing its waste in the lake. It therefore prefers to operate as it is and sell its glue at a slightly lower price.

Mr. **Grabarck**. You could figure a cost-flow ratio whereby loans could be made available to the company. They would have to eventually raise the cost of the glue to pay for the cleanup. The cost of the cleanup would be thrown on the consumer, and thus the burden of the taxpayer would be alleviated. I firmly believe that the consumer will have to pay for it.

Mr. **Reuss**. I don't understand you. You are going to have a low interest loan from the Government?

Mr. **Grabarck**. I say that is our only way out.

Mr. **Reuss**. The taxpayers have to pay for the interest subsidy.

Mr. **Grabarck**. Unfortunately, yes.

Mr. **Reuss**. But you would prefer that than having the consumers paying a higher price for their glue?

Mr. **Grabarck**. No. If you suddenly say to them to install these environmental control devices, or shut down—where are they going to get the money for such an expenditure that quickly? Where are they going to be able to raise the needed capital unless they get a loan elsewhere?

In other words, such money would have to be available through a normal commercial bank in that particular area at a high interest rate or through the Government—where I would recommend a low-interest ratio. But you in the Congress cannot in all justice throw regulations upon business and expect them to comply by these regulations in 1 day or 2 years without some outside assistance. We have in this instance, a 50-year old business establishment and you are putting them in a very precarious position. The loans to put the controls into operation have to either come directly from the Government or they have to be backed by the Government and made available through commercial banks either at the normal rate or the long-term, low interest rate I am proposing. To pay for these loans the companies will have to be allowed to raise their prices, but the minute their prices go up the Federal Trade Commission gets down on them or there is a hassle around the governmental agencies.

Mr. **Reuss**. I would have to disagree with you. Prices are not controlled in this country.

Mr. **Grabarck**. In the biggest corporate enterprises, very subtly, not directly.

Mr. **Reuss**. I don't think you will find the FTC attempting to control the prices of someone who has installed a pollution control device.

Mr. **Grabarck**. This is something new.

Mr. **Reuss**. What about that? Do people agree with Mr. Grabarck's method of dealing with the pollution by the "X" glue company?

Mr. **Scott**. I don't, but I guess I have a somewhat different emotional perspective. I am not all that committed to the commercial system we presently have. I am committed to cleaning up the environment we presently have. I think that comes first. In this matter of consumer sovereignty, for example, the consumer hasn't been sovereign for a long time. He never was really; it is a hoax, always was and always will be.

I think we have got to discipline the consumers and teach and urge them not to be passive in matters of the environment. I agree with Mr. Kenyon that the picture of everybody quietly recycling their garbage at night, sorting things out to give to each collector, is not realistic.

I think that to ask people to ultimately cut down on phosphates and detergents, distributing that little chart you have, and hope that people will quit buying acorns and buy——

Mr. **Reuss**. If I may interrupt you, it was not this subcommittee that thought the solution to phosphates was getting patriotic housewives to buy a particular detergent.

Mr. **Scott**. This is something that it happening.

Mr. **Reuss**. It was you, not us.

Mr. **Scott**. Right. I think the problem in the way to get the phosphates out is not by that sort of voluntary effort. It is just to tell the five or six manufacturers you cannot put them in, and that is the thrust of what you are trying to do legislatively. I think that applies across the board.

Take General Motors. It makes $2.6 billion gross income by working 24 hours a day, 7 days a week year around. That is their gross income. They spend about $15 million according to Nader's estimate, $30 million according to their own estimates, on research and development of less-polluting forms of off-power plants. That is about 7 or 8 hours gross income.

There is something wrong about that. Mr. Nader proposed a solution which at first blush looks very good to me. For example, he said an individual can't relieve himself in the Detroit River. Why should General Motors?

That being the circumstance, why should the anonymous shareholders of General Motors be allowed to profit by the fact that the company is relieving itself in the Detroit River to the detriment of a lot of people who are not shareholders in General Motors?

From that set of circumstances, his proposition, and again it was wildly applauded, was that General Motors stop making profits until such time as it runs itself down to the profit line and spend all that money, $2.6 billion a year after taxes, profit, using those funds to clean up their existing plants.

Mr. **Barcey**. I might suggest one way that might be accomplished. General Motors and a lot of the large corporations are depending upon not real increased durability of goods or innovation in the quality of the good but rather something like style changes, and I would suggest, then, that we would freeze the production of all new goods.

Let us say to the corporations, "You can make 1970 cars, but you cannot make 1971's until you can produce them without pollution and this would in turn kill the market, in a sense.

This would be enough incentive, I would think, to initiate a little bit of action in a pragmatic way. We are confronted with a problem of a magnitude we cannot measure, because if we were paying the true cost for things, I doubt if we would be able to consume .00001 percent of the standard of living we have today.

Perhaps the only way we can really measure this difference would be to take what population the earth would hold, with men in balance with nature, and compare that quantity to the present population. Dr. Simons of the University of Florida has emphasized the balance to be 25 million people. Compared with the 3½ billion we presently have, and the projected 7 billion, less than five out of every 1,400 people could be supported by our resources, maintaining a balance with nature.

This idea of setting minimum standards is really a falsity. The only minimum standard is no pollution.

Mr. Spensley. May I make one comment to Mr. Kenyon's statement?

Mr. Reuss. Yes.

Mr. Spensley. I don't disagree with what he said. I think it is a quite obvious conclusion that industry has to use the natural resources in order to produce products. It is the manner in which they use them. I think the question might be even more which of the products they decide to produce. I guess everyone would not agree with me, but I believe that the consumer has more power than the Federal Government, and I think at this point in time it is a syndrome of our thinking to believe that no matter what we do it doesn't make any difference. Maybe this kind of conclusion comes to me because of my lack of expertise or my position in society in order to influence the legislative processes.

But I would still believe that the decision of an industry as to which product it should produce, whether it be styrofoam cups or ceramic cups, is where the value judgments come in; and maybe the question, then, can be answered through increased ways of trying to educate the public. I have suggested in some of those proposals that Government begin to take more of the responsibility of educating the public, not only on the popular issues but perhaps on the unpopular issues; and despite the fact that perhaps one of the three best Congressmen or people in our Congress would agree that it only can be done when things become politically feasible. The thing that hangs me up there is what "politically feasible" means—whether it means that you Congressmen have to be reelected. I think I would agree with what Ben or Doug said, that the only way we are going to solve the problem is when more Congressmen begin to put their careers on the line, which is a very difficult thing to do. It is much easier for us to ask.

Mr. Grabarck. I didn't want to present it but I will now substantiate as to why I have taken my present stand.

No. 1, obviously I favor business. No. 2, our society did a study which is not yet complete so I won't reveal the exact town—it is in Pennsylvania and is located not too far from the city of Pittsburgh and concerns the operation of a large cement processing plant. In this town of approximately 10,000 people this plant employed 1,200 people directly. Pennsylvania of course recently held hearings in Pittsburgh, regarding air quality standards, and with the State putting a lot of pressure for pollution control, this plant was given the option of cleaning up or closing down. With the regulations suddenly placed upon them they couldn't clean up and presently are in the process of closing down.

Our study is revealing that it would have been better for the taxpayers to have absorbed the cost of a long-term, low-credit loan. Why? Because here is what has happened. We are eventually going to have over a thousand people laid off from work. This of course is going to cut down on the flow of capital in that region. It is a small region. Bigger regions are not hurt as bad. The barbershop has been hurt, the drugstore has been hurt, the supermarket has been hurt. People are not going to buy medicines, et cetera, unless they are absolutely necessary. Since people will not be enjoying luxury items, the clothing and shoe stores will be hurt. The most disastrous effect is that the school system is going to suffer because there isn't going to be as much available money to put into the school system. Our school system is the most important part of this country and it has not been given enough as it is without suffering another setback. The roads will not be able to be maintained and home improvements will not be made, because this is a luxury; it is an added expenditure.

The point I wish to make is that a whole community is going to suffer, plus the fact that we now have more people on welfare. Who is paying for their being on welfare? Answer that question.

I would rather pay to have a man work than to have a man on welfare. I hope this study will be complete in 2 months.

Mr. REUSS. Any answer to William McKinley?

Mr. KENYON. Just to summarize what I think—at least what is happening in my mind is there is need for stricter regulations and there is need for perhaps in some instances a cushion so that business will not be put out of business. If you have "X" glue company pouring waste in the rivers and the regulations say no, you cannot do it, there are several kinds of cushions, either comply in 1 year or allow a 3-percent loan to enable immediate compliance.

Mr. REUSS. May I ask you one more thing about that?

Suppose the "X" glue company had been pouring its wastes into the waters in violation of a Federal law which says that unless you get a permit from the Corps of Engineers you shall not pour your refuse or waste into the waterways. What would your feeling be?

Mr. KENYON. Then I think there would be call for an injunction. In that case, the business would stop operating. That law has been on the books since 1898. It seems to me they ought to know it is there, and they ought to know that if you are going to set up and make rules, you will have to comply with them.

Mr. REUSS. What would you say, Mr. Grabarck?

Mr. GRABARCK. Unfortunately, I am very practical. If I can get around a law when it clamps on me a little bit, I do. I am going to be very honest. I think everyone in this room has. You know, speeding down the highway, we see a police officer, down to 35 miles an hour from 70. Yet we are breaking a law.

Mr. REUSS. I didn't ask you what you would do. My question is what should the public do now that it has discovered this?

Mr. GRABARCK. Why suddenly pick up the Bible and start running around with it? We have been lax in the enforcement of the law for so long—why wasn't this law enforced over the period of years that it was in effect? No; now that everything has reached a peak and everyone is really active in environment, we are going to clamp down on this business. I don't think it is right. We have permitted the business to operate and have allowed the law to lay dormant for this length of time. For the sake of justice we have to make some sort of arrangements so as not to knock this business out of operation.

Mr. Barcey. If we were to force down all these clamps and laws, this would absolutely immobilize the economy. There would be no way at all that we could recover from the thing. We made a mistake, and we didn't realize what we were doing all along. We thought growth for the sake of growth was good.

Mr. Reuss. Are you all suggesting that we postpone the environmental decade until the 1980's?

Mr. Barcey. I am pragmatic enough in the approach to go along with Mr. Grabarck's suggestion. Cushioning.

First of all, we know change requires three things. It requires an actor, you and I. It requires a mandate of change from the public, and that is not there. And it requires the law we have to correct, a technological innovation.

We have to work for those three things. We don't have them yet.

Mr. Spensley. I think business is the last place in this country that needs the cushion. I think the taxpayer needs the cushion. If Mr. Grabarck believes in the free enterprise system—as I believe he does—why should we not shut down that glue company and let a glue company which can produce without pollution come in?

Mr. Grabarck. You are talking about the same thing.

Mr. Spensley. No; I am not. You are saying continue to let that company pollute or give them the money to solve the problem. I am saying why not shut down the company? Why should we cushion it? Let another company come in.

Mr. Grabarck. Have you ever built a business? It is a very simple question.

Mr. Spensley. I never lived through the depression either, but I can talk of some of the things and how I feel about it. Maybe I don't expound with the expertise of owning a business. I have been running a business, but it is a nonprofit business.

Mr. Shaine. I think you are going to find generally that the problem we are talking about is not the "X" glue factory on the shores of Lake Michigan. It is General Motors. But there are going to be small businesses like the "X" glue factory which are going to suffer.

In any big system, like the United States or anything that vast, when you try to impose a major change in priorities, a lot of little people are going to get trampled. The thing is that people are getting trampled now. The people who go to the beach are also little people. They are being trampled by the "X" glue factory. It is a question of shifting the burden. You could cushion by giving the "X" glue company 8 months. But don't give them 10 years. Make it as easy as you can without giving out vast Federal funds which would also end up in the pockets of General Motors to be a cushion.

Mr. Scott. I think one has to be aware of the complexity. The solution to one problem is the cause of another, and it was advocated here a while ago that we could save a lot of Federal dollars by not subsidizing small farms. That means all those people are going to shut down those small farms and go into the city and be supported on welfare in that city. There is no easy answer.

If we scrap the SST, we very seriously hurt Seattle, Wash. There is no doubt about that. We don't say these things lightly. If we run General Motors down to the profit margin, General Motors stock is not going to be very desirable in the stock exchange. I think we know that implication when we say these things.

Mr. Reuss. With reference to the impact on Seattle of stopping the SST, let me present to you a program which I am now working on. This would be to take the money that Boeing is supposed to get from the Federal Government in the next few years for the SST—coming to some $700 million—and cease work on the SST. But we would give Boeing a priority on any research, development, and production of air pollution control equipment, water pollution control equipment, mass transit, solid waste disposal, and so on.

Would that seem to you a better use of Seattle's and the Nation's resources than we have now?

Mr. Scott. Very clearly. We have a manufacturer in Ann Arbor which makes air pollution devices and it is the worst polluter in Ann Arbor. One has to be a little cautious. I think the approach is very sound.

The other thing I want to say is that I get the impression from talking to various people that there are some people who hope we can save the environment without making any sacrifice: If we just do a clever enough balancing act, and if we clean things up a little bit here and there, everything will be great and we will still have our televisions and so forth. But the automobile itself is a pollutant. I am not interested in what comes out of the end of it. The automobiles are just straight pollutants. They ought to be under interdiction in that sense.

Therefore, simply trying to find a way to clean up the particular product of a company, it seems to me, is looking at the problem with very many blinders: Not only is the automobile a pollutant but, as Ben pointed out, in the case of Seattle—and it has been replicated in every major city in the country—the automobile is precipitating all these other things.

The automobile is what is doing us in on the North Slope of Alaska. I think we have to remember that somebody is probably going to get hurt in all this, and we are all probably going to get hurt because we are called upon to make sacrifices. We cannot have a trillion dollar economy and a decent environment, too. Maybe there is a way out, but is is not the Band-Aid approach. I think the kind of research that needs to be supported is a little economic research at the theory level first. We do not understand how to run a stable, as opposed to a growing economy. How we go from a cowboy to a spaceship economy is just totally divorced of any serious study by economists.

Mr. Reuss. Let me ask my last question on what you have just suggested: You have just suggested, in effect, zero growth in the economy. We have a trillion dollar annual gross national product now, and when you say no more than that, you are saying zero growth. I would certainly agree with you, and I developed this thesis in our hearings before the Joint Economic Committee this year—that we have to change our measure of growth so that we crank in the environmental factor.

Let's assume for the purposes of this discussion that we do that, that we rearrange our priorities so that we come down hard on achieving pure air, water, and land. Having said that, however, it seems to me that the burden is on those who would advocate zero growth to tell us: One, what you are going to do about the 20 percent of the population which is quite poor and would just love to have some of those dreadful material things like a washing machine. Second, what you are going to do about getting sufficient revenues in the Federal Treasury so that we can spend the hundreds of billions of dollars that we need to spend on the environment in the next decade. And, third, if you stop economic growth, what are you going to do about providing jobs for the very considerable number of new people who are coming on the job market as well as those who are unfortunately unemployed right now?

I think those are questions that have to be answered, and my own hunch is that we don't have to go to zero economic growth in order to preserve our environment, that what we have got straightforwardly to do is to preserve our environment and then continue, at least for some time to come, to produce material goods, too—but of a nature that does not affront the environment.

Mr. SCOTT. I think the one clear answer to that is that the burden of proof is on the growth at this stage. I agree that the 20 percent of the population that is in very serious economic straits is something we have to be concerned about as a priority matter. I am also concerned about the 20 percent of the population that is overweight, that has four cars. It is a redistributional problem.

I do not think we can sustain our standard of living at the level it is. I think we are going to have to back off; and that means, in fact, from a standard of living point of view, a negative growth, if you will.

Once you have accomplished that kind of thing, you can have a kind of growth that in fact represents positive goals, that does not lead to governmental destruction, that does work within those frameworks. I think it is fine, that you would measure by, for example, the amount of ticket sales at the Cleveland Symphony Orchestra. For the first year they are having to make a public fund appeal.

Those are the kinds of things that do not get measured in our growth at all. A lot of them are going to be very difficult, if not impossible, to put a dollar cost on. The dollar growth has always been easy. You just apply that to a benefit-cost thing and you get a magic answer. You avoid making any judgments. I think we have got to come to the point that we make judgments.

Mr. REUSS. We agree on that. We certainly do have to make judgments. But where I boggle a bit is at the notion that, having made those judgments and enforced them on the cultural and environmental side, I still think we need growth to handle our existing problems of Federal revenues, the poor, and jobs.

There are other ways of doing these things, but it seems to me it is up to the people who say "zero growth" to come up with alternate answers to the problem of revenues, jobs, and the poor.

Mr. SCOTT. I think there are two things that are possible to get lost in. I am not saying we ought not to produce more rutabagas in the San Fernando Valley in California and distribute them into the system. I am saying maybe what we need is fewer Cadillacs. You do not have growth in those sectors that reach the social problems about which you are concerned, but rather growth that takes the place of growth that is totally destructive.

Sure, I want growth in mass transit in the worst way. The best way to pay for that, while still not impeding the environment, is to cut back on the automobile—and all of the costs that are associated with the automobile.

This is going to have a tremendous impact on the glass manufacturers, because they have got the hot idea that you can break up old Coke bottles and make asphalt out of them.

I think you need growth in some sectors. I think you need negative growth very strongly in others. And on balance I suspect it has to come out on a negative rate for the total economy, simply because we are living at a rate of resource use and environmental destruction that we cannot sustain—particularly when there is another world out there that wants everything we have got. It is not 20 percent; it is 100 zillion percent, when you talk about the planet. That is what distresses me.

Mr. **Kenyon.** I think I have come to the conclusion that we really do need to work toward at least a zero growth or at least a small amount of growth. I am also worried about the fact that the little man is not only hurt by dirty beaches but by businesses that are put out of business.

I just want to bring up something I did not have a chance to mention in my testimony. It seems that when a person is for growth, he is usually for some kind of restrained growth or choice of products. Would it be at all possible to misquote the antitrust laws and say we ask, or we demand, that you conspire in restraint of trade? Could we have some sort of committee set up? For instance, the container industry, Continental Can and some of the other industries—these people are always worried that if I stop putting out nonreturnable bottles I am in a bad competitive situation. Could we ask them to get together with other industries that are producing the same type of products under governmental supervision so that hopefully we would not go beyond that?

Mr. **Reuss.** I think the answer is yes, we could, and indeed Secretary of Commerce Stans, to his credit, is I think doing something like this now with certain of these industries.

I have taken too much time. Mr. Carlson, do you have any questions?

Mr. **Carlson.** Just one, if I may, for Mr. Barcey.

In listing specifics of a current environmental program, Mr. Grabarck touched on the welfare program and suggested that people who do not work should be utilized as a labor force to clean up this country.

I do not have a copy of your statement to refer to, but you discussed a restudy of the welfare program. Do you have in mind something like Mr. Grabarck said?

Mr. **Barcey.** From both angles. First of all, by enhancing the quality of life; this is the main theme. But from the other standpoint, yes; a WPA-type project.

The thing to emphasize in all of our programs has to be that we look at cause and effect type things. You do not send a bunch of people to Vietnam to solve a problem there, because that is not how you solve the problem. The causes of that problem are misery, misdistribution of land, ignorance. You do not send the military to solve those problems. One looks at the cause of the problems.

It is the same thing with the welfare rolls. We want to eliminate the cause of people on the welfare rolls. To make sure to get off the welfare rolls they have to be getting a basic education, their children are in school. We can set up programs such as work to clean up the environment.

I believe the other thing is to get them into the labor force, working on programs designed to recycle materials, building the other half of the economic machine I referred to. I cannot think of them directly in terms of make-work projects. It was more in terms of enhancing their quality as a person.

Mr. **Carlson**. That is all.

Mr. **Reuss**. Mr. Indritz?

Mr. **Indritz**. I have just two or three questions. Mr. Grabarck, you mentioned that you have some 2,000 instances of conflicts in redundancies between various Government agency programs.

Mr. **Grabarck**. Those agencies I mentioned.

Mr. **Indritz**. Our subcommittee is vigorously looking into those things. We would welcome your sending us a letter reciting them in detail.

Mr. **Grabarck**. Will they be used as such? The thing is I would be glad to put them all together if they would be used.

Mr. **Indritz**. I prefaced my remark by saying our subcommittee has been looking into them very vigorously. We would welcome them and would express our appreciation for sending us as many of these details as you can.

Mr. **Grabarck**. All right.

Mr. **Indritz**. Second, I think I understood you to say that you criticized our recent report on our waters and wetlands.

Mr. **Grabarck**. I did not criticize it; I was referring to it.

Mr. **Indritz**. Thank you.

Mr. **Graback**. I made reference to it. I pointed out that your report supported criticism I had of the U.S. Army Corps of Engineers, and their lack of action in several instances.

Mr. **Reuss**. It is all right to criticize our reports, I might add.

Mr. **Grabarck**. I did not criticize it; it was a very good report.

Mr. **Indritz**. If you do criticize, we would like to know where you criticize them. We want to improve wherever we can.

Mr. Spensley, you had several recommendations. On item No. 4, you suggested that citizens have the right to sue for damages. Damages are sometimes very difficult for citizens to prove. Did you really mean "sue for damages" or would you prefer suits for injunctive relief to prevent continuing damage to the environment?

Mr. **Spensley**. I meant damages, and I realize in many cases they are hard to determine. Injunctive relief—I have not considered that. I think it probably should be within that category.

I think Mr. Dingell's bill recently was one that reflected this same kind of proposal, and I think in his bill he also talked about suing for damages if I am not wrong.

Mr. **Indritz**. Your first recommendation suggested that the President's Environmental Quality Council publish a consumer report listing preferable products for use by the consumer public. I take it you mean preferable from the standpoint of not damaging the environment, rather than preferable as to the use to be made of it or its ability to satisfy consumer wants. Thus you would leave to the consumer the determination as to what product best satisfies the consumer. You would simply apprise him of information concerning the damage that the product would have on the environment?

Mr. **Spensley.** I think that is the implication of the recommendation; yes. I think the suggestion is that recommendations be made as an informational item for the consumer to use in determining what products he should be interested in buying if he is committed to the environmental cause.

I do not think that kind of information—at least not enough of that kind of information—is available. I see that as a very productive thing that the Council can turn out in addition to advising the President.

Mr. **Indritz.** That is all.

Mr. **Reuss.** Gentlemen, thank you very much, indeed, for your very helpful presentations.

The subcommittee will stand in adjournment.

(Whereupon, at 12:15 p.m., the subcommittee was adjourned.)

APPENDIXES

APPENDIX 1.—THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (PUBLIC LAW 91-190, JANUARY 1, 1970)

Public Law 91-190
91st Congress, S. 1075
January 1, 1970

An Act

83 STAT. 852

To establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969".

National Environmental Policy Act of 1969.

PURPOSE

SEC. 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Policies and goals.

SEC. 101. (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may—

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Administration.

SEC. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall—

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Copies of statements, etc.; availability.

81 Stat. 54.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(E) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(F) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(G) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(H) assist the Council on Environmental Quality established by title II of this Act.

Review.

SEC. 103. All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

SEC. 104. Nothing in Section 102 or 103 shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

SEC. 105. The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Report to Congress.

SEC. 201. The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban, and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals, with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Council on Environmental Quality.

SEC. 202. There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, esthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

SEC. 203. The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof). 80 Stat. 416.

Duties and functions.

SEC. 204. It shall be the duty and function of the Council—

(1) to assist and advise the President in the preparation of the Environmental Quality Report required by section 201;

(2) to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

(3) to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

(4) to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

(5) to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

(6) to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(7) to report at least once each year to the President on the state and condition of the environment; and

(8) to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

SEC. 205. In exercising its powers, functions, and duties under this Act, the Council shall—

(1) consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order numbered 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and 34 F. R. 8693.

(2) utilize, to the fullest extent possible, the services, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Tenure and compensation. 80 Stat. 460, 461.

SEC. 206. Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates (5 U.S.C. 5313). The other members of the Council shall be compensated at the rate provided for Level IV or the Executive Schedule Pay Rates (5 U.S.C. 5315).

81 Stat. 638.

Appropriations.

SEC. 207. There are authorized to be appropriated to carry out the provisions of this Act not to exceed $300,000 for fiscal year 1970, $700,000 for fiscal year 1971, and $1,000,000 for each fiscal year thereafter.

Approved January 1, 1970.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 91-378, 91-378, pt. 2, accompanying H. R. 12549 (Comm. on Merchant Marine & Fisheries) and 91-765 (Comm. of Conference).

SENATE REPORT No. 91-296 (Comm. on Interior & Insular Affairs).

CONGRESSIONAL RECORD, Vol. 115 (1969):

July 10: Considered and passed Senate.

Sept. 23: Considered and passed House, amended, in lieu of H. R. 12549.

Oct. 8: Senate disagreed to House amendments; agreed to conference.

Dec. 20: Senate agreed to conference report.

Dec. 22: House agreed to conference report.

APPENDIX 2

91ST CONGRESS
2D SESSION

H. R. 16436

IN THE HOUSE OF REPRESENTATIVES

MARCH 11, 1970

Mr. UDALL introduced the following bill; which was referred to the Committee on the Judiciary

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A BILL

To promote and protect the free flow of interstate commerce without unreasonable damage to the environment; to assure that activities which affect interstate commerce will not unreasonably injure environmental rights; to provide a right of action for relief for protection of the environment from unreasonable infringement by activities which affect interstate commerce and to establish the right of all citizens to the protection, preservation, and enhancement of the environment.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Environmental Protection Act of 1970".

SEC. 2. (a) The Congress finds and declares that each

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person is entitled by right to the protection, preservation, and enhancement of the air, water, land, and public trust of the United States and that each person has the responsibility to contribute to the protection and enhancement thereof.

(b) The Congress further finds and declares that it is in the public interest to provide each person with an adequate remedy to protect the air, water, land, and public trust of the United States from unreasonable pollution, impairment, or destruction.

(c) The Congress further finds and declares that hazards to the air, water, land, and public trust of the United States are caused largely by persons who are engaged in interstate commerce, or in activities which affect interstate commerce.

SEC. 3. (a) Any person may maintain an action for declaratory or equitable relief in his own behalf or in behalf of a class of persons similarly situated, for the protection of the air, water, land, or public trust of the United States from unreasonable pollution, impairment, or destruction which results from or reasonably may result from any activity which affects interstate commerce, wherever such activity and such action for relief constitute a case or controversy. Such action may be maintained against any person engaged in such activity and may be brought, without regard to the amount in controversy, in the district court of the United States for any judicial district in which the defendant resides, transacts business or may be found: *Provided*, That nothing herein shall be construed to prevent or preempt State courts from exercising jurisdiction in such action. Any complaint in any such action shall be supported by affidavits of not less than two technically qualified persons stating that to the best of their knowledge the activity which is the subject to the action damages or reasonably may damage the air, water, land, or public trust of the United States by pollution, impairment, or destruction.

(b) For the purpose of this section, the term "person" means any individual or organization; or any department, agency, or instrumentality of the United States, a State or local government, the District of Columbia, the Commonwealth of Puerto Rico, or possession of the United States

SEC. 4. (a) When the plaintiff has made a prima facie showing that the activity of the defendant affecting interstate commerce has resulted in or reasonably may result in unreasonable pollution, impairment, or destruction of the air, water, land, or public trust of the United States, the defendant shall have the burden of establishing that there is no feasible and prudent alternative and that the activity at issue is consistent with and reasonably required for promotion of the public health, safety, and welfare in light of the paramount concern of the United States for the protection of its air, water, land, and public trust from unreasonable pollution, impairment, or destruction.

(b) The court may appoint a master to take testimony and make a report to the court in the action.

(c) The court or master, as well as the parties to the action, may subpena expert witnesses and require the production of records, documents, and all other information necessary to a just disposition of the case.

(d) Costs may be apportioned to the parties if the interests of justice require.

(e) No bond shall be required by the court of the plaintiff: *Provided,* That the court may, upon clear and convincing evidence offered by the defendant that the relief required will result in irreparable damage to the defendant, impose a requirement for security to cover the costs and damages as may be incurred by the defendant when relief is wrongfully granted: *Provided further,* That such security shall not be required of plaintiff if the requirement thereof would unreasonably hinder plaintiff in the maintenance of his action or would tend unreasonably to prevent a full and fair hearing on the activities complained of.

SEC. 5. The court may grant declaratory relief, temporary and permanent equitable relief, or may impose conditions on the defendant which are required to protect the air, water, land, or public trust of the United States from pollution, impairment or destruction.

SEC. 6. This Act shall be supplementary to existing administrative and regulatory procedures provided by law and in any action maintained under the Act, the court may remand the parties to such procedures: *Provided,* That nothing in this section shall be deemed to prevent the granting of interim equitable relief where required and so long as is necessary to protect the rights recognized herein: *Provided further,* That any person entitled to maintain an action under this Act may intervene as a party in all such procedures: *Provided further,* That nothing herein shall be deemed to prevent the maintenance of an action, as provided in this Act, to protect the rights recognized herein, where existing administrative and regulatory procedures are found by the court to be inadequate for the protection of such rights: *Provided further,* That, at the initiation of any person entitled to maintain an action under the Act, such procedures shall be reviewable in a court of competent jurisdiction to the extent necessary to protect the rights recognized herein: *And provided further,* That in any such judicial review the court shall be bound by the provisions, standards, and procedures of sections 3, 4, and 5 of this Act, and may order that additional evidence be taken with respect to the environmental issues involved.

APPENDIX 3

HOUSE BILL No. 3055

[MICHIGAN HOUSE OF REPRESENTATIVES]

April 1, 1969, Introduced by Rep. Thomas J. Anderson and referred to the Committee on Conservation and Recreation.

A bill to provide for actions for declaratory and equitable relief for protection of the air, water and other natural resources of the state; to prescribe the duties of the attorney general, political subdivisions and the citizens of the state; and to provide for judicial proceedings relative thereto.

THE PEOPLE OF THE STATE OF MICHIGAN ENACT:

Sec. 1. This act shall be known and may be cited as the "natural resource conservation and environmental protection act of 1969".

Sec. 2. The attorney general, a city, village or township or a citizen of the state may maintain an

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action for declaratory and equitable relief in the name of the state against any person, including a governmental instrumentality or agency, for the protection of the air, water and other natural resources of the state from pollution, impairment or destruction, or for protection of the public trust in the natural resources of the state.

Sec. 3. (1) When the plaintiff in the action has made a prima facie showing that the conduct of the defendant has, or is reasonably likely to pollute, impair or destroy the air, water or other natural resources or the public trust of the state, the defendant has the burden of establishing that there is no feasible and prudent alternative and that the conduct, program or product at issue is consistent with and reasonably required for promotion of the public health. safety and welfare in light of the state's paramount concern for the protection of its natural resources from pollution, impairment or destruction.

(2) The court may appoint a master or referee, who shall be a disinterested person and technically qualified, to take testimony and make a report to the court in the action. The costs thereof may be apportioned to the parties if the interests of justice require.

Sec. 4. (1) The court may grant temporary and permanent equitable relief, or may impose conditions on the defendant that are required to protect the public trust or air, water and other natural resources of the state from pollution, impairment or destruction.

(2) If administrative, licensing or other such proceedings are required or available to determine the legality of the defendant's conduct, program or product, the court may remit the parties to such proceedings. In so remitting the court may grant temporary equitable relief where appropriate to prevent irreparable injury to the natural resources or public trust of the state. In so remitting the court shall retain jurisdiction of the action pending completion thereof, for the purpose of determining whether adequate consideration has been given to the protection of the public trust and the air, water or other natural resources of the state from pollution, impairment or destruction, and, if so, whether the agency's decision is supported by the preponderance of the evidence upon the whole record.

(3) If such consideration has not been adequate, the court shall adjudicate the impact on the public trust and air, water and natural resources of the state in accordance with the preceding sections of this act, or where, as to any such administrative, licensing or other proceeding, judicial review

thereof is available, the parties shall be remitted to the processes of such review as augmented by section 5, and upon the vesting of jurisdiction in any other court of the state, the court may dismiss the action brought hereunder without prejudice to the parties.

Sec. 5. (1) In such administrative, licensing or other proceeding, and in a judicial review thereof made available by law, the attorney general, a city, village or township, or a citizen of the state may intervene as a party on the filing of a verified pleading asserting that the proceeding or action for judicial review involves conduct, programs or products which may have the effect of impairing, polluting or destroying the public trust or air, water or other natural resources of the state.

(2) In any such administrative, licensing or other proceeding, the agency shall consider the alleged impairment, pollution or destruction of the public trust or air, water or other natural resources of the state and no conduct, program or product shall be authorized or approved which does, or is reasonably likely to have such effect so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety and welfare.

(3) In an action for judicial review of any proceeding

described in subsection (2), the court, in addition to any other duties imposed upon it by law, shall grant review of claims that the conduct, program or product under review has, or is reasonably likely to impair, pollute or destroy the public trust or the air, water or other natural resources of the state, and in granting such review it shall follow the standards and proceedings set forth in this act in addition to the review authorized by Act No. 197 of the Public Acts of 1952, as amended, being sections 24.101 to 24.110 of the Compiled Laws of 1948.

Sec. 6. In an action where a plaintiff or intervenor seeking judicial adjudication as provided by this act has failed to intervene in any administrative, licensing or other such proceedings, the court may remit such plaintiff or intervenor to such proceeding for amplification of the record therein, and may order the granting of intervention and the granting of review therein as provided in section 5. However, where intervention was available in such administrative, licensing or other proceedings, and where the plaintiff or intervenor seeking judicial adjudication hereunder wilfully and inexcusably refused intervention therein, the court may dismiss the action with prejudice to the plaintiff or intervenor.

Appendix 4.—"Progress Means Pollution: An Idea Whose Time Has Come—and Gone," by Frank M. Potter, Jr.,[1] Executive Director, Environmental Clearinghouse, Inc., Washington, D.C.

I. INTRODUCTION AND SUMMARY

Knowledgeable men today appear to be in general agreement that mankind faces a new dimension of environmental crises—that, however distant the prospect may appear, we have developed the power to so degrade the environment in which we live and upon which we depend that the quality of our lives—possibly our existence itself—is at hazard.

The reasons underlying these crises are varied, but they seem to spring from a common source: Our ability to manipulate the physical world has progressed faster and farther than have the social institutions and protective mechanisms which might act as controls over that ability. In the midst of the technological revolution, individuals become demoralized and ineffective; private enterprise has no motivation to tamper with the goose that lays the golden egg, and the Government is inadequately stimulated to take forceful steps to resolve the dilemma.

Our environmental problems are not entirely the legacies of deficient social institutions: A certain amount of ecological perturbation is inevitable and is, indeed, important to the survival of civilization as we know it. Nonetheless, while the ecology of the earth is under considerable stress as a result of man's actions, and will continue to be so, the lack of ability to devise better corrective social restraints upon rampant technology appears to be the decisive factor in the environmental crises that confront us.

Not until we are able to step far enough away to see the crises and the institutions in the same context will we be in a position to diagnose the problems and begin to prescribe remedies. Such a comprehensive review may, it is hoped, suggest ways in which we may make those institutions more responsive to the needs of man and the laws of nature.

Current environmental problems vary in effect and force, but they are nothing if not pervasive: Existing at all levels of society, from local to international. They evidence the lack of an adequate information base, unresponsive and ineffectual techniques for technological evaluation and restraint, rapid rates of physical change compounded by a critically slow social reaction time, all further magnified by a surprising lack of consensus on the environmental goals that we really wish to achieve.

Pollution, which we may define as using a resource in such a way as to make it less desirable for other uses, is inevitable only until we can develop adequate tools for dealing with it. The Government will never do the job by itself. The key to the problem, if any exists at all, seems to lie rather in putting stronger weapons into the hands of the public—helping it to precipitate the necessary reforms through judicial and other channels. That process would be greatly facilitated if we were able to require those who intend to make use of common resources to disclose their intentions and the expected consequences of their actions far enough in advance to allow less directly interested parties to consider possible unanticipated consequences and if necessary to force a public review in which the range of social costs and benefits might be explored impartially. Also, the burden of showing the need for action should be shifted from the public to those who wish to make use of public resources.

Current public concern with environmental issues shows no signs of slackening and, assisted by new ways of funding environmental protection programs, must provide the ultimate impetus for any upturn in what has been a rapidly declining quality of life for all men.

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[1] Copyright, 1969, Frank M. Potter, Jr.

Pollution is becoming increasingly international in scope. Here the issues will be less easily resolved, chiefly because of the lack of effective nonviolent sanctions. The best available tool for counteracting global environmental problems may lie only in effectively mobilizing world public opinion.

Current proposals for treaties for the use of the oceans and the ocean floors provide a useful exercise in developing imaginative steps to protect a vital part of the ecology of the earth. The best hope for a workable device for this purpose might lie in the creation of an organization to serve as an ombudsman for the seas.

II. THE INSTITUTIONS—HOW DO WE GET WHERE WE ARE?

A. The individual

No rational person consciously acts to degrade the quality of his own life. He may do so through inattention, neglect, or general hopelessness—and to some extent most of us do—but rarely if ever does an individual set out deliberately to foul his own nest. It is difficult to find a current newspaper without at least one story on environmental problems; and people who read these stories react to them. This reaction may take the form of amusement; more often, and with increasing frequency, the reaction is sympathetic. Environmental concerns are no longer the private preserve of the birdwatchers; the same bell tolls for us all.

In 1969 the National Wildlife Federation commissioned two polls on American environmental attitudes. The polling organizations reached similar conclusions; most people are actively concerned about environmental problems, and would prefer that their taxes be devoted to a greater proportion of the costs of solving these problems than is now the case. The level of concern rises with income, and varies inversely with age.

Over 50 percent of those interviewed felt that the Government was devoting insufficient attention to environmental problems and was providing insufficient financial support toward their resolution. Over 80 percent felt personal concern, and most of these were deeply concerned.

What then keeps them from the barricades?

Apathy is the most common explanation, but the surveys appear to rule this out. The most significant inhibitor of action may rather be that we are too easily convinced of our own political impotence. The larger the social grouping, the more difficult it is for any person to make a significant impact upon group decisions. On the other hand, when aroused, people can take and have taken effective action.

A coalition of citizens joined forces in 1969 to require a reluctant U.S. Government to quadruple the amount of funds to be used for waste water treatment facilities. They did so by informing their elected representatives that this was a matter of specific, personal, and urgent priority; their representatives listened and responded.

The lack of adequate information is also a powerful factor, but this too can be overcome. Today there is almost a superabundance of data about environmental destruction, and by no means all of it is the uninformed emotional outpourings of a few fuzzy-headed radicals (and reactionaries), as some have claimed. Respectable and respected scientists and citizens are picking up the cudgels and are making sizable impressions with them.

A few years ago a small and determined group of citizens banded together to oppose the largest utility in the United States, fighting plans to construct a major hydroelectric plant within 50 miles of New York City. They stopped the utility in its tracks. That company was Consolidated Edison, the plant was the Storm King project, and the Federal Power Commission, which must decide whether or not the plant should be built, still has not decided the case. The strong case made by the citizens depended in large measure upon the fact that they were able to propose alternatives to the project, supported by a wealth of technical and engineering detail, to suggest that New York's serious power problems could be met by less damaging methods. Although Consolidated Edison has not yet given up the project, it has adopted the alternatives and many sophisticated agency-watchers consider it unlikely that the plant will ever be built.

Another more philosophical issue must be considered. Assume that we, individually or collectively, are confronted with a clear option: Do we live very well for a short period or do we cut back economic growth in favor of long-term survival for the species? With or without volition, we appear to have adopted the former course of action, and it is by no means clear that we would act much differently if the choice were clearer. "Apres moi, le deluge" is a life-style confined neither to France nor to the 18th century. This conflict permeates the environmental issues of the day, at all levels of each institution.

As individuals, we tend to be somewhat ambivalent about the importance of an environmental conscience. In some respects, many people fail to observe even a minimal degree of environmental good manners. For example, a shift in public attitude would produce an instant halt to the littering of our highways, but no such shift is visible. With very little effort, we could easily educate our children in the importance of environmental responsibility; yet if anything our children seem to be taking the lead in educating us. A national environmental teach-in is scheduled for April 1970 in schools and colleges across the country, and there are signs that problems of pollution are occupying a rapidly increasing portion of the attention of young people. A more encouraging sign could scarcely be imagined.

It is important to distinguish between the actions and attitudes of individuals and those of the groups into which they form themselves to consider environmental problems. The biggest problems faced by citizens' groups seldom involve a lack of motivation; they are typically financial. It is rarely to anyone's economic interests to oppose a polluter; this means that the concerned citizens must themselves assume these costs, although the financial burdens involved in speaking out against a powerful and well-financed industry or government agency may be substantial. Although these are not usually publicized it is known that the costs of carrying on a major controversy may exceed $500,000. We cannot reasonably expect any group to bear such a burden, nor should we as long as that group is acting to protect assets that are common and valuable to all. At the same time, of course, we have a legitimate interest in seeing that public subsidies will be employed only in valid and meritorious cases.

It might also be noted that citizens may not always organize themselves to protect an environmental system. One group may be interested only in visual pollution, while another is interested in noise, and it is an unfortunate fact of life that the normal resolution of a pollution problem is to push it into another area which may not be so vigorously defended. The public concern with power generation facilities producing air pollution in the form of coal dust, oil droplets, and increased sulfur dioxide emissions has played a significant role in the encouragement of nuclear plants, which involve none of these problems but which may have their own problems in terms of radioactive and thermal pollution of cooling water. What we need is groups with a total environmental concern.

B. Private institutions

Private businesses suffer to an extent from the same lack of information that plagues individual citizens. Unlike those citizens, private companies can usually afford expert advice, but for a number of reasons that advice is not always sought.

The horizons of the private decision making structure are deliberately limited to those factors which are considered to be of immediate importance, principally economic. The hidden social costs of organized activity—what the economists term externalities—tend to be thrust out of the decision matrix. These costs still exist, however, and must be borne by society as a whole if not by the agency which creates them. A classic example would be a pulp processing plant which emits fumes of hydrogen sulfide, causing wrinkled noses and peeling paint for miles downwind. The resulting inconvenience, possible health costs, and certain increases in maintenance costs have not traditionally been imposed upon the agency which created them. Instead they have been imposed upon society generally, regardless of the capability or willingness of individual members to bear them. And of course as Garrett Hardin has clearly shown, the short-term interests of the entrepreneur may be directly opposed to the long-term interests of society generally (G. Hardin, "The Tragedy of the Commons," Science (Dec. 13, 1968)).

This system is not inherently evil, nor are its managers committed to profit at the expense of the public. Indeed, some private companies have taken significant steps to limit the disadvantageous social consequences of their operations at considerable internal cost, quite beyond what they were required to assume by law. Unfortunately, a voluntary approach to reducing environmental problems does not appear to be adequate to a rational, long-term approach to resolving them.

The forces of competition tend to minimize such voluntary efforts: Few men or companies, however public-spirited they may be, are prepared to expend large sums upon the internalization of indirect costs. Nor can they do so without incurring the wrath of stockholders even further removed from the environmental affronts which they have indirectly created.

The mechanisms for balancing social costs against economic values must be found outside the private institutions themselves, and they are: This is a major function of government. It is important to note that the laissez-faire philosophy which at one time characterized the attitude of American Government toward at least American industry is inappropriate to the problems which both confront today. It is also apparent that on environmental issues the Government is likely to expand its control-oriented program. Public attention has already been focused on air and water pollution as appropriate areas for concentration of effort. There are other areas in which Governmental action must be anticipated: among them noise, solid waste disposal, and the byproducts of energy transfer are mentioned with increasing frequency.

Governmental overview, if impartially and reasonably imposed, need not be hostile to the private sector; it may even be in its short- as well as long-term interests. The National Association of Manufacturers has never been known as a hotbed of social activists, and yet members of NAM operating committees have endorsed proposals for a strong Federal body overseeing environmental issues. Businessmen have to breathe, too, and are prepared to accommodate themselves to the ecological imperative, so long as their fellows are subject to the same rules.

We cannot assume that this increased governmental concern will take place without some economic disruption. Marginal producers will feel the pinch most strongly, and some may not survive. Nevertheless, the important consideration to be borne in mind is that the rules must be enforced fairly and impartially upon all parties.

Polluting industries have most often resisted pressure to clean up their operations by claiming that the measures proposed are unduly prohibitive or confiscatory. Their chief means of resistance has usually involved threats to pull up their stakes and move to a more permissive climate. It is believed that this last resort has been adopted infrequently, if at all, and that it is only likely to occur where a producer has found himself impossibly squeezed between falling profits and rising costs. It has also been alleged that these are the marginal producers whom the next strong wind will blow away in any case, so that little lasting economic damage ever occurs.

In concluding the discussion on private institutions, it might be useful to stress the distinction between those which exist to make a profit and those which do not. The nonprofit groups, smaller in size, financing, and influence, have only recently begun to interest themselves in environmental issues. The interest of the private foundations in these topics may recently have been diminished by changes in the tax law, which seem to discourage the kinds of intervention which may have political implications. If this turns out to be lasting, the cause of environmental protection will have received a severe setback in the United States.

C. The public sector

Governments appear to be unresponsive to the environmental problems of today, and seem even less likely to be adequate to those of tomorrow. In major part this appears to be due to the fact that the pace of technological change has so accelerated that governments, as presently oriented, find themselves unable to adapt to new problems and to exercise the type of control for which they were originally constituted.

1. Executive branch

Although the problems of the executive branch are essentially similar throughout the hierarchy, it is important to bear in mind that the mass of government workers—the lumpenbureaucracy—marches to a drumbeat that only it can hear, which (if it exists at all), is faint, indeed. Higher levels of government, although presumably more responsive to broad social needs, generally find their choices so circumscribed by business-as-usual decisions further down the line that their theoretically available policy options become dissipated by the inertia of the machinery. This phenomenon is by no means peculiar to environmental problems, although these tend to be somewhat more acute because of the high stakes involved and because the new issues do not fit easily into existing patterns of bureaucratic stimulus and response.

In practically every agency of government, at almost every level, there develop strong and seemingly almost irresistible pressures to maintain the status quo. As one progresses from local to national bureaucracy, this inertia rapidly increases. A random example: Very early in the 1950's the Eisenhower administration stated a strong preference for private power development as against public power, but it was not until the Kennedy administration took office 8 years later that the direction of the Government had changed enough for it to become an effective supporter of private power. Nor could the Democrats reverse the trend.

There are also powerful personal influences that affect the career civil servant—influences that are environmentally, in current bureaucratese, counter productive. As one observer has put it, "the paramount objective of the permanent bureaucracy is permanence." This contributes directly to the institutional resistance to change already noted. Agency employees tend to react self-protectively, and in so doing they protect their own institutions. Examples of this tendency may readily be found: It was probably the principal roadblock encountered by Ralph Nader's "raiders" in their Government agency investigations during the past two summers, who often ran up against a blank, noncommunicative, bureaucratic wall. The same conspiracy of silence resulted in the attempted burial of several agency reports on the controversial supersonic transport, all of which were unfavorable and all of which had to be wrenched from unwilling bureaucratic hands by actively concerned Congressmen. It was to combat this reaction that Congress recently passed the Freedom of Information Act, requiring disclosure of all but certain specified documents—a public law which has been honored far more in the breach than in the observance.

This problem is compounded by a frequent lack of clear policy direction from the upper levels of government to the lower. New policies may be found in new regulations and pronunciamentos which go religiously unread, or they trickle down by word-of-mouth through a number of communicants, each with his own built-in bias. This communications system serves as an efficient filter for any content which may fortuitously have crept into the public statements of the man or men on top.

These problems should not be ascribed solely to bureaucratic malevolence. Their problem is essentially the same as that of the private citizen: They are not programed to relate everyday decisions to any specific action of the Government machinery. Moreover, the results of yesterday's decisions are rarely communicated to the demisionmakers as a corrective for tomorrow's programs. To be sure, there is enough feedback that everyone knows when the dam doesn't hold water (which happens), but when a dam destroys a delicate ecological balance and wreaks havoc in the local community, this is rarely perceived as a real world problem, reported back and worked into the apparatus in such a way as to avoid similar problems in the future.

Still another aspect of the problem is that Government agencies compete with one another. For example, for decades there has been a mute and polite war between the Departments of the Interior and Agriculture; the first casualties of this war have frequently turned out to be the environmental considerations. Countless examples of this competition have been observed: Timber cutting practices on public lands and in national forests, pesticide regulation (if that is the correct word for it), dam building and soil conservation are just a few. The same kind of competition may occasionally be found between the public and private sectors of the economy; once again environmental considerations usually are among the first items to be jettisoned when the order comes to lighten ship.

This competition is healthy in some respects, and the public may even occasionally benefit. For instance, several years ago, the Army Corps of Engineers conceived and attempted to give birth to a plan to build a high dam on Alaska's Yukon River which would flood hundreds of thousands of acres of land in the process. This dam was successfully opposed by the Fish and Wildlife Service of the Interior Department on the grounds that it would do untold damage to the wildlife in the region. The operative word here is "untold"—no one knew just how much damage would have been done, and the Corps was not seriously interested in finding out.

Governmental competiiton has other consequences as well: Although they operate with public funds, governmental agencies are under pressure to maximize the value of the funds that they expend. This is not undesirable, but it produces the same problems affecting the private sector: Agencies are subjected to great pressure to externalize social costs. The budgetary restrictions placed upon the head of a large operating Government agency are no less severe than those upon the directors of a large corporation, and the body to which they report is not much more aware of the importance of environmental factors than is the average stockholder of American Telephone & Telegraph Corp. This analogy ought not to be pressed, since it lies within our grasp to improve the ecological understanding of the Congress within a realistic time-frame, and it will be difficult to do the same for the average citizen.

Finally, the actions of Government agencies acquire considerable momentum, which must be maintained if they are to continue to survive and grow (C. N. Parkinson, *Parkinson's Law*, Houghton Mifflin Co., 1957). The Corps of Engineers pursues an aggressive program in promoting its projects. A major factor in this system is the method of calculating the costs of these projects against the projected benefits to be provided. Cost/benefit calculations have, however, tended to inflate the benefit side of the equation while downgrading costs. It is not that the Corps wants to dam every river and dredge every harbor in America so much as that an institutional myopia has crept in, magnifying immediate objectives and obscuring the relationship of those objectives to the needs of society.

2. *Legislative branch*

The essential function of the legislative branch of Government is to formulate and to review policy. In so doing, it operates under constitutional or other social restraints, and it must of necessity paint with a broad brush. Translating basic policy decisions into specific go and no-go decisions is never an easy task, and is often complicated by pressures within the executive branch to change the policy decisions themselves. This can be done on a small scale and is done, often without significant risk since legislative oversight is inclined to be sporadic.

More importantly, policy is only as good as the information upon which it is based, and this information tends to be biased, conflicting, fragmentary and/or out of date. Turning to the U.S. Congress as a case in point, consider the effect of the following factors upon the theoretical nonbias with which a policy decision is supposed to be approached:

(1) *The nature of the proposal.*—Most legislation enacted by the Congress is first proposed by agencies in the executive branch. (This, incidentally, may not be quite so common today: The legislative proposals of the present administration have been criticized as somewhat sporadic. Many of the bills now before the Congress, however, are holdovers from earlier years, and the basic pattern seems to have changed very little.) Support for these measures tends to be channeled well in advance of their consideration—facts are marshalled, charts are prepared, as are witnesses. A frequent byproduct of this process is that the Congress may focus on the wrong issues.

(2) *The congressional committee structure.*—Committees of the Congress, and especially their ranking members, are the principal focus of much of the power in Washington. This apparatus determines which bills shall be heard, whether testimony in opposition shall be considered, and if so, how it will be rebutted. Unless the issue is a prominent one, under the attention of the press and the public, or unless a maverick Congressman digs in his heels, those controlling the committee have a relatively free hand in developing the arguments for and against the bill; hence they control its future.

(3) *The bias of congressional leaders.*—The environmental crisis is a relatively new phenomenon, and the young are, in general, more concerned with the problems than are their elders. This is as true in the Congress as it is elsewhere, and the result is that many of the older Members, who exercise greater control over legislative action than do their younger colleagues, are visibly less inclined to move vigorously to meet the new challenges. Exceptions to this generalization can easily be found, but its general truth is not seriously questioned. The effect of this bias toward inaction ought not to be discounted.

(4) *The adequacy of the testimony itself.*—Assuming that the measure is a reasonable one, and that the controlling committee is interested in developing the true issues, the witnesses called to testify may nonetheless not be the best available. Witnesses on environmental issues have tended to be the elder statesmen—established scientists and professionals whose views on new problems and on the need for new approaches have been colored by their own studies and viewpoints, which may be considerably out of date. A review of nongovernmental scientific testimony over the past few years shows several names which tend to crop up again and again; these individuals (who may be spectacularly well qualified in their areas of competence) may occasionally edge into areas in which

they are not so well qualified to speak, and often seem to respond to the unspoken needs of some committee members to be reassured that "things are not all that bad, and somehow technology will find a way." Although not every witness falls into this category, it happens often enough to constitute a real problem. There is a need to develop the base of scientific testimony available to the Congress on environmental issues and to see that the younger men and women (who in some respects at least have a greater stake in the future than do their elders), whose factual knowledge may be far more current, shall also be heard.

(5) *The context of the legislative decision.*—Another conflict, not at all restricted to environmental issues, faces the legislator who must decide whether to favor the interests of his own constituency as opposed to those interests which he may or may not perceive as national. Thus Congressmen and Senators from the West are generally inclined to favor legislative proposals to open public lands for development (mining, grazing, lumbering, oil exploration, etc.), whereas the interests of the entire country might seem to favor retaining these lands in a less vigorously exploited condition. How to measure the interests of local areas against those of society is a serious question; this task may be one of the most significant functions of Government.

The broad nature of the authority and responsibility of the legislature may prevent it from exercising effective control over the actions of the organizations under its theoretical direction. Aspects of this problem have already been alluded to. The policies that the legislators are called upon to define are so broad that they cannot possibly be spelled out in detail, and yet it is in those details that the actions of Government become manifest, and where the shoe pinches most cruelly.

The legislative mechanism may also be criticized for one factor which has been instrumental in allowing the institution to survive: its slow reaction time. The Congress is a highly conservative body—deliberate in adopting new courses of action, and slower to change them once adopted. This is a source of strength, preventing today's fad from becoming tomorrow's straightjacket, but it is also a real source of danger to the system. Science and technology have transformed the world of the mid-twentieth century into something that was quite unimaginable 50 years ago. The rate of change is accelerating, and it is a brave man who claims that he can predict the state of the world in the year 2000. Shrill voices may decry technology and demand that there be a halt to new technological development; they are no more likely to be heeded than were the machinery-wrecking Luddites of 19th-century England. Whether they are right or wrong is quite beside the point; barring massive catastrophe, technology will not be significantly curbed and the rate of technological change will almost certainly continue to accelerate.

New technology creates new social conventions, which in turn affect legislative policy. Yet the mechanisms for determining that policy are keyed to technological considerations that may have been out of date in 1789, and to decision-making processes that have remained essentially unchanged since the days of Roger Bacon. Consider another example: That of massive climatic change. Scientists tell us that urban development and energy transfers now have a significant effect upon global weather patterns. We hear on the one hand of the "greenhouse effect", which tends to raise atmospheric temperature as a function of increased carbon dioxide production, and on the other of increased amounts of pollution in the air, which tends to raise atmospheric temperature by decreasing the amount of solar radiation reaching the Earth's surface. Some scientists, extrapolating present activities, speculate that it would take 10 years to decide which is the more powerful effect, and that by then large scale climatic changes may be irreversible. This view is by no means commonly held, but it is under serious consideration by men whose voices ought to be heard. They have not been heard by the Congress, and if they were, they would be outnumbered 10 to one by men saying "we are not certain, we do not know, and we should take no action until we do."

These problems are not the exclusive province of the Congress; they are those of the scientific community and they are ours as well, as humans with a presumptive interest in survival. There is no way to force these problems to the front, conjoined as they are with an historically validated precedent for doing nothing—yet.

Legislators tend to focus upon institutions rather than upon individuals—to see the needs of the larger groups, whose existence depends upon traditional thought patterns and legal fiction. A water pollution problem is perceived as that of a municipality or an oil company, an air pollution problem as that of a manufacturer. Yet it is individuals whose favor the legislator must seek if he is to survive. This suggests in turn that if individuals can organize themselves to be heard as an institution, concerned with environmental survival, the legislators will respond. This has not yet happened generally—no significant environmental lobby has yet made its voice heard on the national level; if any exist elsewhere, their story has not properly been told.

3. *Judicial branch*

The courts exist to see that the written and unwritten rules of sociey are followed—that the policies formed by the people and their elected representatives are observed. Within narrow limits, recognized and indeed insisted upon by society, the courts have been successful in this function.

As a means of achieving rational decisions on environmental issues, the courts are usually ineffective. Their influence could increase, but this would require a significant departure from the usual legalistic approach and would involve the recognition of a basic and inalienable human right to a livable environment. Such a decision appears to be only a remote possibility. Without this new constitutional approach, the courts will almost certainly be hamstrung by inadequate policies adopted by the legislature and by common law rights which were defined centuries before the current environmental problems appeared.

Lawyers are adept at pouring old wine into new bottles, and efforts are underway to push the courts into a more enlightened attitude on environmental questions by torturing old principles of law into new shapes, designed to meet the needs of the time. Principles of sovereign trust, of public and private nuisance, and of public rights in private property are being dragged out, dusted off and sent into battle, but may well be expected to return on their shields, bloody and bowed. In time, the law could adapt, but it is time that we lack.

The basic defects go deeper than theories and tactics: only in rare instances can the courts make decisions with more than local force and effect. The U.S. court in southern New York may properly hold that the Federal Department of Transportation must observe certain procedures specified by statute that may have escaped the Department's notice, and that for this reason a highway shall not be built over the Hudson River. At the same time the same Department in apparent disregard of the same procedures seems to be traveling down the same path in favoring the construction of longer runways into the Columbia River. Technically the decision of the New York court is not binding in Oregon; the Oregon courts are free to disagree with their eastern brethren and such disagreements are in no way uncommon. A means does exist for resolving interjudicial disputes: the Supreme Court of the United States. That Court, however, is already operating under a fearful load and can devote only a limited amount of its energies to environmental questions, however imperative they may appear to be.

The courts also lack an adequate information base upon which to make their decisions. The common law system is grounded upon the adversary system, the theory being that each side will present the most favorable case, and that the court will then resolve the dispute on the basis of the evidence before it. The environmental problems arising today are highly complicated—so different from the land disputes and tort actions of centuries ago that they hardly bear comparison. In theory, expert testimony ought to be available to both sides to support their cases; in practice, this simply does not work. Even if environmentalists can afford to hire experts (and they often cannot), experts cannot always be found. It is a rare electrical engineer who will agree to take the witness stand on behalf of opponents to a powerplant or transmission line; he knows well that other utilities may thereafter hestitate to contract with him for services in circumstances that may be wholly unrelated to the present controversy. Conscientious men do exist and someone may be found to testify but it is not easy; cases have been lost and will continue to be lost for this reason. Without that interplay of expert testimony, the court is at a major disadvantage, and the decision is likely to suffer.

Even if experts can be found by all parties, the court's information problems are not thereby solved. Technical questions are already difficult, and they are growing more complex. Judges spring from different backgrounds, but the law operates upon the theory that their experience is essentially irrelevant to the issues that they must decide; historically, ignorance has been a prime virtue, the court acting as the "tabula rasa" upon which the cases of the opposing parties may be written. This is a manifest absurdity, but it is the way the law grew, and it is a fact that lawyers with weak technical cases prefer judges with little technical competence.

Another weakness built into the judicial system from the environmental standpoint is its tendency to delay decision. Combined judicial and administrative delays have postponed the Storm King decision by 5 years and if the parties fight down to the wire another 2- or 3-year delay is likely. This delay has in many respects worked in favor of the conservation group, but this happy state of affairs is not the rule. Citizens opposed to a particular proposal or project are usually forced to seek injunctive relief from the courts; they may and often do find that this relief cannot be obtained without their posting a substantial bond, which is quite beyond their means. The result is that while they work their way through the courts, the opposition is busily "doing its thing"—building or digging or chopping down, and by the time that the court is ready to decide, the essential question has become moot. Injunctive relief is typically the only possible hope for environmentalists, since the alternative is a damage suit, and it is a basic tenet of such organizations that money cannot replace what is threatened.

Constitutional revision has been proposed as a means of providing a clearer and more enforceable definition of our rights to an undegraded environment. New York State has adopted such a program, and similar efforts have been mounted on a national level. An environmental bill of rights would indeed be a valuable tool, but no such proposal has a chance of even being seriously considered without vastly increased pressure upon the Congress and upon the legislatures of the several States; there is no evidence that such pressure is forming. Consequently, at present such a step must be considered too remote to be seriously considered.

D. The national and international nature of environmental problems

Much of this paper has been devoted to American institutional and environmental problems. Neither category is exclusively ours: England has had and continues to have serious air pollution problems; the Russian sturgeon is virtually extinct, and with it, a valuable national resource; Tokyo displays almost every conceivable environmental problem; and the indiscriminate use of pesticides has wreaked havoc in South American ecosystems.

Environmental problems are not peculiar to specific ideologies or geographical locations, although these may play a role. At least in part, the problems arise because of identifiable human failings and are encouraged by continued human inadequacies.

Pollution is limited by neither internal nor external political boundaries: dirty air and water pass from country to country with no restriction, and people downwind and downstream can only suffer, possibly comforted by knowing that their hands are not likely to be any cleaner than those of their neighbors.

The international community is rapidly becoming aware of the nature of the problems presented by environmental degradation. Sweden has taken an important step by proposing a worldwide conference on the environment for 1972, under the auspices of the United Nations. The general question is one on which many nations can agree, but our complacency with this happy state of accord must be tempered by the realization that agreement is usually easy to reach in principle, until specific problems arise. Everyone is against pollution, but the ranks of enthusiasts quickly thin as specific problems arise and specific remedies are proposed.

As we have noted, man has been less than successful in his dealings with environmental problems on the local and national level. Internationally, our record is even worse; nor do histories of the international fish and whaling commissions encourage a sanguine view of prospects for the future. The United Nations, in turn, has neither the constituency nor the commitment to act as a source of resolution for the foreseeable international environmental conflicts. It was not created for this purpose, and would require extensive internal change if it were to take them up seriously.

As in the case with national problems, we are challenged to develop new ways to attack international pollution. In so doing, we must take account of the deficiencies built into the system and, wherever possible, should adapt corrective techniques to the situation as we find it, not as we would have it.

E. Patterns of institutional inadequacy

The preceding review of social institutions reveals some basic patterns: problem areas where difficulties appear to be concentrated and where effort may profitably be devoted to provide a more enlightened context for environmental decisions.

Perhaps the most important of these is the lack of adequate information at the operating level—information about what is happening, what is at stake, and what the alternatives may be. In some cases this information is not there because it is not available—because no one has yet asked the right questions. In other cases, and probably more frequently, the information is not available to the person who needs it when he needs it.

Another major area of inadequacy might be described as that of the lack of effective control systems: ways of determining that decisions once made are carried out, and that the sand that creeps into the machinery is removed with a minimum of time and trouble.

The next problem area is probably the least controllable: the time scale within which we must respond to the environmental challenges is so compressed that whatever information and control systems we can develop may still be unable to operate effectively. The rate of technological change will probably remain rapid, although it has been suggested that a leveling off is likely in some areas (J. Platt, "What We Must Do," 166 Science 1115 (28 November 1969)). The objective then becomes to develop sufficiently responsive systems to permit society to react to new crisis before these have acquired unstoppable momentum.

Still another problem is that our trouble-sensing procedures are inaccurate and inadequate. We do not seem to be able to react when problems are foreseen; we do not respond until they become massive and therefore less easily managed. This in turn requires the exertion of far greater corrective force than would be necessary if we had reacted sooner and more adequately.

It also points up the failings of the more or less simplistic solutions that we often adopt as a means of correcting environmental problems, which are rarely if ever simple in origin, and are not usually curable by the simple solutions presented to and accepted by decisionmakers who are not professionals in these complex areas. The Department of Health, Education, and Welfare has concerned itself strongly with the effects of carbon monoxide and sulfur dioxide in discharging its statutory responsibilities under the Clean Air Act. While it has not entirely ignored the interacting and cumulative effects of the many other pollutants that affect the quality of our air, it seems to have spent considerably less time and effort upon them, notwithstanding the fact that some may have a subsantial effect upon our health and welfare.

A further problem is that we have never seriously set out to define what we mean when we talk about an optimum or livable environment. True, we all tend to make these judgments on a subjective, nonanalytical basis, and we focus on issues with which we may personally and emotionally be involved. The tennis-shoed little old lady may grieve for the redwoods or a threatened brook without realizing that bigger and more serious problems may threaten much more basic values—perhaps life itself.

Subjective judgments on these questions are unavoidable, and may not be undesirable. But at the same time it would seem important to devote a portion of our energies to an informed effort to define the public interest, and to clarify some of the conflicts that are inevitably involved. If, for example, we continue to favor the internal combustion engine as an integral element of our transportation system, what will this mean in terms of projected levels of air pollution, climate, and human health? Should we not, in other words, develop a base line, from which we may then judge the consequences and costs of proposed new courses of action?

If we are in a position to relate the consequences of certain behavior to a better defined concept of what we want as an environment, we can then measure one against the other, and take rational positions for or against a given proposal. If we first define the amount of permissible variations in salinity, heat, oxygen, and other factors affecting the quality of our rivers, we can then judge how many dams and powerplants those rivers can tolerate before they are damaged or destroyed as resources.

As indicated at the outset, these problems may be found in different forms at each level of man's organized activity—local to global. They tend to increase in intensity as the area of concern expands, and the larger groups may and often do frustrate the wishes of the smaller groups. This question requires separate treatment, but it is important. We have traditionally attempted to cope with the phenomena by setting aside areas of sanctuary to protect the smaller units from the action of the larger, and this may not have been a happy choice. It might be wiser to concentrate upon building an automatic review procedure into the decisionmaking apparatus of the larger groups with appropriate sanctions, to ensure that the interests of their constituent members are not ignored while larger scale policy decisions are being thrashed out.

III. NEW STRATEGIES—WHERE DO WE GO FROM HERE?

A. Local and national problems

The first and basic corrective need is to construct a more authoritative and responsive information-gathering network, and to develop methods of distributing that information at minimum cost to those who need it. This need affects all institutions, at all levels, and is only superficially satisfied at present. How this should be done and who should do it are important questions yet to be resolved; strong arguments can be made for keeping the apparatus out of governmental hands, and the profit factor provides equally powerful reasons for keeping it out of the marketplace.

Emphasis in developing any such information network must necessarily be placed upon the excellence of the service—differences of opinion are no vice, when responsible and adequately documented, and unanimity of opinion ought properly to be a source of some concern.

The traditional approach to the development of social control systems has involved the creation of administrative regulatory bodies, acting as expert arbiters to protect the public interest. This approach has been spectacularly unsuccessful; the regulators have inevitably become captives of the industries that they were established to regulate. Whether consciously or not, the regulators have adopted roles as promoters and protecters of the theoretically regulated. There is little hope that improved environmental protection will result from the establishment of a new superregulatory environmental agency.

Another method suggested for controlling rampant environmental degradation involves the establishment of technical and technological monitoring systems—putting scientists in the position of active maintenance, control and dissemination of environmental information and protective measures (B. Crowe, "The Tragedy of the Commons Revisited," 166 Science 1103–1107 (November 28, 1969); see also "Technology: Processes of Assessment and Choice" (July 1969, National Academy of Sciences), and "A Study of Technology Assessment" (July 1969, Committee on Public Engineering Policy, National Academy of Engineering), both submitted to the House Committee on Science and Astronautics). This effort is hardly more likely to succeed, requiring a degree of political sensitivity and aggressiveness which is foreign and perhaps antithetical to the scientific method, and certainly inconsistent with past history and current tradition.

The most adequate solution to the problem of devising workable control mechanisms appears to lie in putting necessary information into the hands of the concerned public, which has the most direct interest, and by giving it better tools and ways of calling environmental miscreants to account. We cannot prevent the bureaucrat or the entrepreneur from making decisions which have short-term advantages for him but long-term disadvantages for society. What we can do is to require him to make his decisions and reasons public, and to provide a forum which can review those decisions with broad social interests in mind.

In effect, this would involve building into the decisionmaking structure of government the ability and directive to consider long-term and ecological consequences of activities within their areas of responsibility. This might be accomplished by taking a number of specific steps:

1. Long-term effects of programs and policies must be examined and detailed as a matter of public record.

2. Postmonitoring control systems must be established to determine whether the environmental effects were those anticipated, and if not, why not. Here again the public should be given easy access to the full record, and procedures should be established to permit citizens to put the appropriate agencies on notice that problems have arisen requiring attention.

3. Executive agencies should be required as a matter of regular procedure to obtain the views of other interested Federal, State, or local groups, public and private, on questions related to their programs. Responsible issues raised should be answered on the record, and if no answer is forthcoming, or if the answer is unsatisfactory, procedures should be established to permit judicial review of the matter.

4. Public agencies adopting specific programs should also be required to document whether and how these programs are best adapted to the comprehensive needs of the situation. Where reasonable alternatives exist, these should be described, and explanation should be given as to why they were not adopted.

5. Each agency taking action should be required as a matter of law to justify why any action at all was desirable. This is not so simple-minded as it sounds:

the Corps of Engineers is hard put to defend itself when asked to develop the cost/benefit calculations of the virtues of not building a dam. The assembling of a group of technologists and/or engineers presupposes great pressure to do something—the option of not going forward at all is often obscured or ignored.

This latter requirement suggests itself for nongovernmental areas of endeavor as well. Highway builders, land developers, and others have a far easier job in proving their cases than do their opponents, and are much better equipped to deal with these problems. A heavy burden of proof is placed upon the people presuming to speak for the public interest. To get into court they must show that active harm will result, not balanced by the putative good to be achieved through the proposed activity. The burden is misplaced—those who wish to use environmental assets should be required to show that the balance favors their proposals.

We must also develop mechanisms for more rapid, extensive, and convenient public review of major public and private agency decisions. This might best be done through the creation of a Public Defender for the Environment, with authority to review general governmental policies and to pass upon specific problems which are considered to have significant environmental consequences. In extraordinary cases, this defender might be given the authority to issue temporary cease-and-desist orders as a means of preventing the otherwise inevitable destruction of important resources. Control procedures must, of course, be set up to prevent such a defender from acting irresponsibly, or to force him to act in proper cases.

We must encourage the public to participate more effectively in the making of decisions with environmental implications, as to which it has no present measurable impact. This means citizen action programs, keyed to the issues of the day. Call them lobbies, pressure groups, or anything else; they are important. Their actions should be coordinated in such a way as to have a meaningful impact upon the legislative bodies whose decisions affect us all.

We also need to develop new ways of funding citizen organizations with environmental objectives. Where they act to protect common assets, they should be supported by the public treasury or by the organizations whose actions created the problem in the first place.

The first method might be accomplished by the enactment of a Federal statute to the effect that any person or group winning or, perhaps, even instituting a court case based upon the violation of a Federal polluiton law should be entitled, in the discretion of the trial court, to recover reasonable attorney's fees and costs. It would be necessary to spell out in detail the nature of the cases in which such relief would be appropriate, but the basic idea merits discussion.

In many ways it would appear more desirable to force the would-be polluter himself to underwrite the costs of protecting the resources that he has threatened. This could be done by requiring a public bond to be filed by agencies which propose to take actions with potentially undesirable environmental consequences. That bond would be subject to forfeit if an antipollution law were violated or if unforeseen environmental consequences should occur, and the funds might be applicable to legal fees or to cleaning up the resultant problems.

We should also step up our efforts to find more adequate technological solutions to the problems which technology has itself created. The most effective and least harmful method that we were able to develop to clean up the infamous Santa Barbara oil spill involved the massive use of straw, men, and hand rakes—hardly a creative response. Transferring oil from Alaska's North Slope to world markets could create serious environmental problems: the use of gigantic icebreaking tankers risks the Arctic Ocean, and the use of overland pipelines threatens a tundra that has remained substantially unchanged for many, many years. Both techniques menace a fragile ecology that might take centuries to recover, when and if something unforeseen should happen.

It is almost inconceivable that more effective and less expensive techniques could not be found to meet these and other environmental hazards of the time. The civilization that could put men on the moon ought to be able to do better. The solutions to these problems might be expensive, but the failure to find answers will certainly cost us more.

Some of the strategies described above have already been implemented in the United States, others are under consideration, and some may never have been publicly advocated.

In 1968, several Congressmen formed an unofficial Ad Hoc Committee on the Environment as a channel for communication on environmental issues between the Congress and interested scientists and informed citizens. The committee now numbers 120, and is in regular contact with 132 expert advisers. Membership on the committee is open to any interested legislator—Senator or Representative, Republican or Democrat. This step does not entirely satisfy the need for better information, but it seems to be a long step in the right direction. The information network available to members of that committee may soon be expanded to meet State and local demands for better environmental information, and it ought also to be useful to other groups with similar concerns.

Legislation has been considered in the Congress which could go far toward arming citizens' organizations with better information on what Federal agencies are doing and why they are doing it. The National Environmental Policy Act of 1969, sponsored by Senator Henry Jackson and Representative John Dingell, contains language to this effect, as does the airport construction bill recently passed by the House. It remains to be seen, of course, to what extent the executive agencies will be successful in their inevitable efforts to weaken the impact of these measures. Their jobs will be made more difficult by the certain knowledge that interested legislators will be watching them carefully.

These steps and the ones that remain to be taken are hopeful signs in an area in which hopefulness is uncommon. If anything, these efforts should be accelerated; we may not be able to afford much more delay, and we should begin to exercise what talents we have for imaginative and bold departures from patterns of behavior that are no longer adequate to the needs of the time.

B. International problems

The factors that inhibit adequate response to local and national pollution problems are even more effective in preventing international action, and yet we now realize that many national environmental problems have supranational consequences. Thus control procedures to keep global pollution to a tolerable minimum assume critical importance.

Although attention has only recently been focused on international environmental problems, it is clear that this is an important area for concern. The proposed 1972 U.N. conference evidences the acceptance of this concern, but few specific suggestions have been made to create mechanisms to meet today's problems, and those which are predictable in the near future.

The need for better information channels is as great here as it is on the smaller scale. If anything, political corrective steps can be even more easily blocked than are those acting at State and national levels, and we have not yet devised a workable system of sanctions to minimize those problems which all concede to exist.

If it is true, as argued above, that the interests of small groups are often at odds with those of the larger societies in which they exist, how much more true is this of separate nations, where antagonisms are more easily created and sustained, and where common concerns may be deliberately obscured? Downwind and downstream nations from those applying persistent pesticides may see their own problems clearly, but their apprehensions are likely to be viewed as quite unimportant to the nation creating the problem. That nation may well consider righteously that its first interest must be to protect the health and food supply of its own citizens, and that the undesirable side effects are simply someone else's problem. Unfortunately, they may be everyone else's problem.

The same conflict lies at the heart of many of the issues discussed earlier, but its impact is perhaps most clearly visible in international issues. The strongest peaceful sanction that we have been able to devise to influence international decisions appears to be the force of public opinion. More attention might profitably be devoted to the use of public disclosure as a force to produce more adequate decisions on international environmental issues. A weak reed it may be, but it must serve until we can find a stronger sustitute.

If we narrow our focus to a specific topic, the ways in which such pressures might be brought to bear become clearer. One such suggests itself immediately as of current and significant interest: treaties for the use of the seas. The significance of this problem area has been perceived clearly by national interests which see the oceans as a vast potential source of food and mineral resources, and thus as critical to their survival.

We must pass over without further analysis the critical issue of sanctions as beyond the scope of this paper and as beyond the ability of the concerned parties to resolve at this time. We shall also assume, for the purpose of argument, that it will eventually become possible to develop working treaty relationships with the affected nations and that such a treaty will provide an operating structure as well as a policymaking body.

What suggestions may be made to provide some assurance that the vast assets of the ocean will be used for the common good, and not misused on behalf of narrow segments of humanity? Proposals have been made to provide a focus for scientific impact at the policymaking level, these disciplines will of necessity be represented at the operating levels as well. These proposals do not appear to be entirely adequate to current needs—they are lacking in the control aspects described above, and will be as inadequate to international issues as they are on the smaller and presumably more easily managed national scale.

We need an ombudsman for the seas.

The functions of such an organization would be simple: To review and to comment upon proposed actions by the operating arm of the treaty organization and others, to consult with the policymaking arm on matters which are or which ought to be under consideration, and to make recommendations to these and to all nations on ways to use, without misusing, the oceans.

This later point is particularly important, since the seas can be significantly affected by the activities of nations which may not be treaty signatories—even by nations which are entirely landlocked. Inland rivers and estuaries play an important role in the life cycles of fish and other species important to man; these in turn may be highly vulnerable to actions affecting airsheds or watersheds with oceanic outlets. Few nations in the world remain entirely oblivious to the opinions of others and the ability of the ombudsmen to focus worldwide attention upon previously ignored problems could prove to be a highly valuable tool.

When and as sanctions are developed for the international treaty, consideration should also be given to making sanctions available to the ombudsmen, under adequate control procedures. The ombudsmen should not, however, be policemen; they will have enough problems without adding new ones. They should have and maintain a close working relationship with whatever organization handles the operations of the treaty organization.

The ombudsmen should have direct access to current oceanographic and ecological information about the seas. Again it would be desirable to keep informational and experimental activities separated from their primary functions; it would also be important to keep them separate from the conventional channels of authority within the operating arm of the treaty organization.

History indicates that, in the seas as elsewhere, strong pressures will be brought to bear by those seeking to exploit these resources. It will be critically important to build into the treaty organization some form of countervailing pressures to insure that the long-term productivity of the oceans is not endangered by man's effort to turn these assets to limited advantage. If we have learned nothing else from the ecologists, we know now that we exist within a closed system and that we must develop processes and procedures that will permit us to recycle those resources that we must use. To this end, the ombudsmen can serve us well.

For a number of reasons it would seem desirable to create a three- or five-member organization of ombudsmen with staggered, rotating memberships. They should have a semipermanent professional staff; continuity is important, but a constant access to fresh blood can provide a responsiveness to challenge that will be invaluable to the participating organizations and nations.

It may not be desirable to have a highly structured decisionmaking apparatus within the organization itself. No member should be given the power to veto the action of the group or of any other member; indeed, if any member perceives a particular problem as important, and if his colleagues do not share his views, he should be given latitude to study the problem and to report upon it to the appropriate bodies, supporting his report with whatever evidence is available.

The ombudsmen should be required to submit an annual report on their operations to the treaty organization, and copies of this report should be given wide distribution to member nations as well as to the United Nations. Dissenting views should be made available in the same form. The incentive to review specific problems might come from within the organization itself, or it might come from any member nations. If review is declined, the reasons for disapproval ought to be spelled out in detail.

Funding is critical. As one of the important functions of the treaty, the ombudsmen should be assured of a regular budget, subject to no diminution because of the concerns of any member nation for tender subjects. Unless the organization can be truly independent and free of budgetary apprehensions, its work must inevitably suffer.

Clearly the problems of protection of the global environment are not confined to the use of its oceans. Treaties for the oceans are only a beginning—but there is no good reason why this treaty should not be viewed as the first real step toward more comprehensive and adequate environmental protection. Men require a world that men can live in.

The oceans are important for a number of reasons. It has been shown that they are not as productive as they were once thought to be, in terms of long-term food sources for humanity. Nor can we develop the oceans as a safety valve for man's tendency to fill up all available living space with himself or with his waste products. We must instead concern ourselves with protecting a vital element in the ecosystem of Spaceship Earth; at the same time we may perhaps take a halting step toward developing techniques that may prove effective in other areas as well.

Antarctica has so far withstood the territorial instincts of man in reasonably good order. For this we cannot take much credit—there has been very little pressure to exploit these resources. This region of the world may now prove significant in other ways: Oceanographers claim that some of the best fishing waters in the world are found off the coast of Antarctica, supported by the massive upwellings of nutrients resulting from convection currents created by the warm and cold water masses in the area. The treaty organization might well begin its charter by mounting an intensive review of Antarctic ecology, to determine how this resource may provide a sustained value for man. The ombudsmen can play a significant role in this endeavor.

In international relations today, we need techniques to disperse and not to intensify international rivalries. The potentialities of a treaty for the use of the oceans, with built-in guarantees for their long-term protection, would appear to be a matter of high priority.

Appendix 5.—Communications for the Record

Statement of Thomas M. Martinez, Chairman, and Ricardo J. Perez, Executive Director, Chicano Environment Committee, Stanford University, Stanford, Calif.

It is fitting that the House Subcommittee on Conservation and Natural Resources become sensitive to unintended and unanticipated consequences of the problems involved in any Government attempt to conserve, or restore this country's natural resources. One such consequence is intrinsic to the ideology of conservation of energy, which is the normal guiding philosophy of our competitive, economically oriented, and politically determined society. That is, it is inaccurate to divorce the notion of pollution from its effects upon human beings. Man is the greatest natural resource on earth. If any of earth's resources are depressed, they are all depressed. In today's context, a great deal of attention is aimed toward the problems of the physical environment, and it is about time. At the same time this is going on, the same political leaders are attempting to withdraw support, both public and economic, for developing the minority population in this country. You would not be contributing to the betterment of nature if you suppressed your awareness of this fact, and attempt to at least point this out to the many idealists—young and old—who want to do something to improve the country. We recognize that the purpose of the subcommittee is not to take on matters that might be considered clearly within the jurisdiction of the Secretary of Health, Education, and Welfare. Nevertheless, anyone reading the report of the subcommittee ought to recognize the inherent contradiction in elevating the physical environment above the human environment.

The interrelationship between man and the environment is everywhere evident, but not everywhere polluted. The most clear example of the pollution of both man and the environment at the same time may be the case of the farmworkers in this country. In a recent survey it was revealed that there are about 150 cases of pesticide poisonings for every 1,000 farmworkers per year. There is now ample evidence of countless unreported cases of pesticide poisoning. In California, the Chicano farmworkers have a name for such poisoning. They call it "la muerte andante," or the walking death. This is an especially important fact, because the farmworkers are in a very real sense the front line of defense for the rest of society. If they are becoming ill and diseased, then the consumer is next. It would be useful to start the environmental decade with a more realistic conception of natural resources.

Institute of Scrap Iron & Steel, Inc.,
Washington, D.C., December 30, 1969.

Hon. Henry S. Reuss,
Congress of the United States, House of Representatives, Rayburn House Office Building, Washington, D.C.

My Dear Mr. Reuss: I read with great interest your statement calling for the 1970's as "the environmental decade."

Of particular concern to the Institute of Scrap Iron & Steel is that portion of the statement dealing with land. The iron and steel scrap processing industry, I believe, has taken a leadership role in seeking solutions to the problems of abandoned and obsolete automobiles. It is our feeling that junked automobiles as well as all metallic solid waste should be recycled to preserve natural beauty and conserve natural resources.

As I pointed out in my testimony before the House Subcommittee on Minerals and Mining, regarding the Mining and Minerals Policy Act of 1969:

"Obsolete metallics should be viewed not as waste or junk, but as an economic resource—mines above ground, if you will * * *. Our Nation cannot afford to waste scrap. Since the end of World War II, American mills and foundries have remelted from 60 to 90 million tons of ferrous scrap annually. Converting these tonnage figures to the equivalent tonnages of natural resources, a savings of from 180 to 270 million tons of minerals per year were realized."

I am enclosing for your information the fall issue of our publication Phoenix Quarterly, which deals with the environment as well as a backgrounder on "The Role of the Scrap Processing Industry in Solid Waste Disposal."

If we can be of any assistance to you or members of your staff, please call or write. The institute would welcome the opportunity to work with you in any way you deem appropriate in order to achieve environmental quality.

Sincerely,

WILLIAM S. STORY, CAE,
Executive Vice President.

(NOTE.—The materials transmitted with this letter are in the subcommittee files.)

STATE OF OHIO DEPARTMENT OF HEALTH,
Columbus, Ohio, January 28, 1970.

Mr. HENRY S. REUSS,
Chairman, Conservation and Natural Resources Subcommittee, House of Representatives, Washington, D.C.

DEAR MR. REUSS: I noted in the January 19 issue of Air/Water Pollution Report that your subcommittee will be conducting hearings on February 2–6 regarding the views of interested organizations as to what actions programs must be developed to attain a healthy environment in the 1970's.

I also noted that one of your questions is, "How can we encourage more public participation in the consideration of proposals that affect the environment?"

I would like to bring to your attention that, through the partnership for health, Public Law 89–749 and its amendments in Public Law 90–174, provision is made to encourage public participation in the consideration of environment along with other health aspects.

In Ohio we have developed 11 areawide comprehensive health planning agencies, and for the most part, all of these agencies have provided for a staff position in environmental health and the pattern of operation has been through the development of areawide and county committees which concern themselves with the environment. The boards of trustees of the areawide agencies are constituted to be composed of at least a majority of consumers and the memberships of the county and areawide environmental committees are likewise so reconstituted. Our statewide advisory council ultimately reviews the recommendations of areawide agency proposals for comprehensive health planning, and is likewise constituted of a majority of consumers.

I am enclosing for your information a study which was done by the Missouri Office of Comprehensive Health Planning in relation to environmental health and State agencies of comprehensive health planning, along with a map of Ohio showing the areawide comprehensive health planning agencies and those having environmentalists on their staff.

I hope that this information will be of value to your committee and if you desire further information. I would be happy to supply it or I would suggest that you might contact Mr. Nicholas Pohlit, executive director, National Environmental Health Association, Lincoln Building, 1550 Lincoln Street, Denver, Colo. 80203. (Telephone: Area 303–222–4456.)

Sincerely,

BERNARD M. HULL, M.P.H.,
Environmental Health Coordinator,
Office of Compresensive Health Planning.

(NOTE.—The materials transmitted with this letter are in the subcommittee files.)

NATIONAL RIFLE ASSOCIATION OF AMERICA: STATEMENT FOR THE RECORD

The opportunity to present the views of the National Rifle Association in support of the interest of our over 1 million sportsmen members is greatly appreciated at the beginning of this environmental decade in which so much needs to be done, so many destructive and unplanned environmentally degrading actions need to be reversed. Mr. Chairman, the National Rifle Association, often associated with only the many shooting sports in the minds of much of the general public, has in fact long been concerned with the conservation and restoration of natural resources. In 1891, our official journal—then entitled "Shooting and Fishing"—stated forthrightly that, "Our position is that we consider the welfare of the fish and game of first importance and to this end personal sacrifices should be made." The name of our official journal has since been changed but our association's concern for natural resources has grown and is still reflected in its many articles on the conservation of natural resources and associated environmental problems.

The counsel of the distinguished ladies and gentlemen who have previously testified before the committee on the environmental decade is acknowledged. We share their concern for the state of our environment. However, we here limit our comments to more specific points concerning recreation and attendant land-use practices because of the nature of our association and the purposes for which our members join together. It is not our intent to detract from the importance of the larger issues of burgeoning human population, environmental degradation, and deteriorating esthetic values. Our views in this area are certainly intended to reinforce much of what has been stated in previous testimony before this committee.

Historically, genuine sportsmen of this Nation have shown great concern for the welfare of wildlife and the related natural resources. Such sportsmen organized early to combat the destruction of wildlife by market hunters, first, by pressing for passage of wildlife protection laws, then by organizing into game protective associations to help enforce those laws. What wildlife abundance we enjoy today is due chiefly to the dedication and funds provided by sportsmen.

Since there have always been unscrupulous individuals in all walks of life, we have had our market hunters and game poachers exploiting our natural resources with no thought for tomorrow. Such men, of course, cannot be likened to sportsmen in any way. However, we see a distinct similarity between the heedless acts of the early market hunters and those persons, corporations or companies today who would strip the remaining resources from our land, turn them into quickly profitable items, dump untreated wastes into the nearest river with no thought of the many who would suffer. The same profit motive and economic force that severely depleted passenger pigeons, snowy egrets, Atlantic salmon, bison, and the great hardwood forests of the East is still evident. Today it is directed toward many of our other natural resources. We know that it must not continue.

The answer is, of course, conservation. And since we've now run up against the mounting problems of our wasteful actions and their effects upon our basic health and welfare it has become environmental conservation. And again we must learn to live within the limits of our natural resources and prevent the desecration of our environment simply for today's profit.

One major area of our concern in the field of outdoor recreation is the availability, or nonavailability, of land for wildlife habitat, recreation, and esthetic enjoyment. Government authorities have predicted that the next 10 to 20 years will see the end of further public acquisition of land for wildlife, human recreation, or esthetic enjoyment.

It is our concern that the acquisition of such natural areas and their reclamation and restoration be accorded due importance. Though the sparing of the Everglades National Park gives us one small ray of hope, too many of our seashores and estuarine areas are being filled in and developed, denying needed productive acreage to marine fauna and flora. Future generations will have only what we leave for them—no more. It is up to this generation to decide what this will be.

Similarily we have great concern for the welfare of our wildlife, and this too is directly related to the protection of land for these wild creatures. When, in the next few years, the acquisition of wetlands for use by waterfowl finally must cease, population limits for their species will be set by harshly restricting their living space.

It is not widely understood that the sport of hunting such a renewable and reproducing resources is a major tool of wildlife management, culling out the surpluses of young which, if unchecked, will eventually overpopulate and degrade their own habitat, with annual starvation. Thus the sport of hunting is not only a valid use of such renewable resources, but is used by wildlife biologists as a necessary tool for the maintenance of a healthy wildlife population. All too often the well-meaning citizens demand absolute protection of game, but this overprotection of a viable wildlife population can be biologically harmful. What must be acquired, protected, and restored is the nonrenewable resources of wildlife habitat. This is the genuine basic determinant of the qualities and quantities of wildlife that we will have to enjoy in the future.

Also, we must make a realistic appraisal of the recreational uses made of wilderness areas. Much wilderness is fragile; overuse may bring it degradation—perhaps even its ultimate destruction. However, much pressure could be removed from these areas by better planning. Composite areas of picnic grounds, ranges, casting pools, nature walks, put-and-take fishing ponds, hiking or riding trails, and other outdoor activities can remove pressures of overuse from more pristine areas.

We must never forget that people need to renew and revive their physical and mental vigor through traditional recreational use of the environment. This need is continuous. The future organization of our living space must recognize and react to it. We have no better testimony to this need than the anguished cries of the victims of the moral and physical decay in our city slums. Open space must be provided not only for recreation but for the environmental education especially needed by urban youth. Conservation, environment, ecology, and their surrounding semantics have long been the proprietary interest of the middle-aged affluent suburbanite. We must break this old distinction and involve all youth. Tomorrow is theirs.

We submit that our present national pursuit of a philosophy of economic growth based on the principle of single use of finite resources is gravely in error. Our dependence on fosil fuels and the resulting wastes which pollute air and water, and the growing mountain of trash which clutters our countryside, are all ample evidence of this philosophy. This cannot be remedied overnight. An abrupt change to a closed system which recycles our limited natural resources would be catastrophic. However, change we must, if man is to survive on this planet much longer. Government must lead by promulgating new legal, economic, and moral tenets which will protect our collective right to a clean environment free of the accumulated industrial offal of previous generations. But Government must do this through programs which change without destroying basic economic, social, and moral values. On the broadest spectrum we need to mute and bend the thrust of an economic system based on a throw-away, single-use principle, to a closed type of system that recycles the limited natural resources of the Spaceship Earth.

Since the beginning of life on this planet the existence of life forms have been governed by an inflexible rule of "adapt or die." Man, himself, is not exempt from this rule. Man alone has the vision and foresight to plot the course of his actions. The challenge he now faces is not the need for knowledge; he knows of what must be done. His challenge now is to find the collective will and to develop leadership equal to the task.

CLIFF MORROW,
Director, Hunting and Conservation.

CITY OF EDMONDS,
PARKS AND RECREATION DEPARTMENT,
Snohomish County, Wash., March 23, 1970.

Hon. HENRY S. REUSS,
Subcommittee on Conservation and Natural Resources,
Rayburn House Office Building,
Washington, D.C.

DEAR SIR: I loudly applaud you and your colleagues for your call for an "environmental decade." As a professional park and recreation person, I will be deeply concerned and affected by your subcommittee's findings.

As I understand it, your subcommittee is requesting suggestions on action programs for the environmental decade of the 1970's. The following is my suggestion:

The creation of salt water and fresh water underwater parks, hopefully to be partially federally funded. Preferably, these parks should be close to urban areas, or within easy access of urban areas. This would be an effective means of preserving the underwater environment for generations to come.

As you know, water pollution, especially in urban areas, is an increasing problem. There are few locations still available within these areas to protect the environment. An example of this is what is happening now in the city of Edmonds, Wash. The Puget Sound waters off the city beaches of Edmonds is one of the few locations in the entire Seattle-Puget Sound area where almost the entire scope of Puget Sound underwater life can be found in an area that is not as yet affected by pollution, and is within easy access of a major urban area. Realizing this, the city government of Edmonds is now in the process of creating an underwater park in this area. My hope in this suggestion is that possibly Edmonds, as well as other cities, counties, and States can be aided, and possibly even coerced, by the Federal Government in the creation of underwater parks.

Some of the restrictions for these parks could be as follows:

1. Restricted to nonuse for any power boats or vehicles.
2. No one be allowed to remove, by any means, any item, living or inanimate, within the boundaries of the park. Possibly hook-and-line fishing might be permitted, but the fishing should be from a surface device without a motor in use during its stay within the boundaries of the park. This last item would be debatable, however.

I sincerely hope you will give this suggestion consideration, as I feel it would be an excellent action program for the environmental decade of the 1970's. I would be most happy to participate in any type of discussions that might make this suggestion a reality.

Sincerely,

JIM JENSEN, *Director.*

A STATEMENT FROM THE RETURN TO RETURNABLE BOTTLES (AND OTHER CONTAINERS) COMMITTEE OF ENACT (ENVIRONMENTAL ACTION FOR SURVIVAL), ANN ARBOR, MICH., MARCH 13, 1970. (THOMAS FRIEL, SPOKESMAN.)

DEAR SIRS: We are sure that you are aware of the problems created by nonrecyclable containers.

These empty cans, bottles, and other nonreturnables are seriously depleting our nonrenewable natural resources. These containers are being used up at an astronomical rate: 26 billion bottles and 48 billion cans in 1 year alone. We are running out of materials to make these containers; but they are creating another serious problem: They are garbage. Everywhere we go, these containers are there, waiting for us. Roads, rivers, parks, and landfills have become the natural habitat of these once-used creations.

As first steps to end the problem, we think Congress should:

(1) Issue a statement to the container manufacturing industry demanding that they return to and initiate the use of recyclable containers.

(2) Issue a statement to the citizens of this land that they demand and use returnable containers.

(3) Have an investigation of the container and packaging industries.

(4) Take action on the findings of this investigation.

We think this action should be legislation banning nonrecyclable containers.